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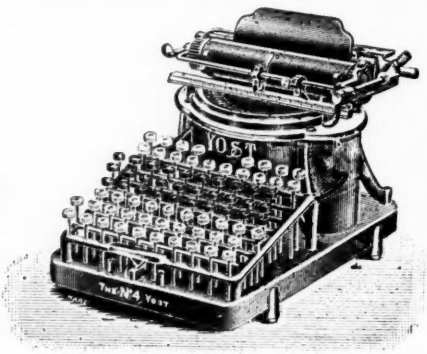


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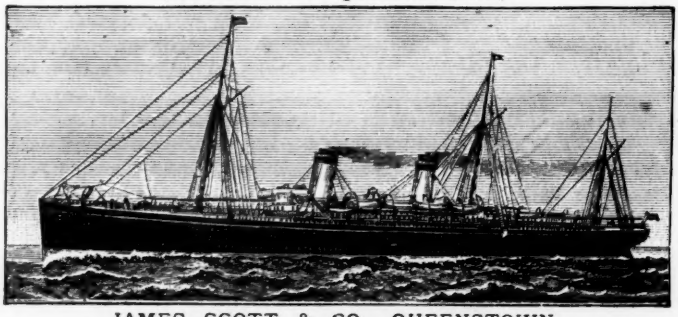

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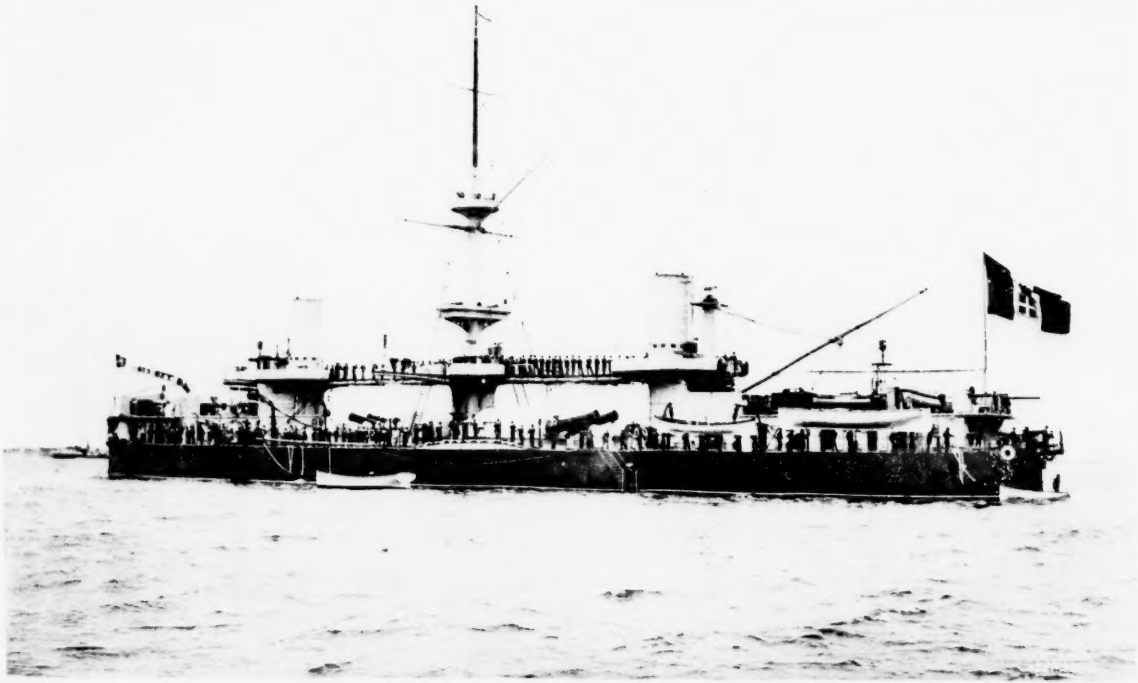

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See Page 1,156.

The Italian First-class Battle-ship **"ANDREA DORIA,"** 10,200 tons, 10,000 I.H.P.

*Photograph by West & Son, of Southsea.*

ERRATA.—*July Journal.*

Page 808, line 4, *for* "sent it to" *read* "sent to."

Page 810, line 18, *for* "stuck" *read* "struck."

# THE JOURNAL
OF THE
# ROYAL UNITED SERVICE INSTITUTION.

VOL. XL. SEPTEMBER, 1896. No. 223.


[*Authors alone are responsible for the contents of their respective Papers.*]

## TWO YEARS IN AUSTRALIAN WATERS.


*By Vice-Admiral N. BOWDEN-SMITH.*


Wednesday, April 15th, 1896.

The Right Hon. The EARL OF HOPETOUN, G.C.M.G., in the Chair.

SO much has been written about Australia during the last twenty years, that nothing new must be expected in the following remarks. My paper will deal with matters as they appear from a naval officer's point of view, and is compiled from remarks and observations made by me between November, 1892, and January, 1895, assisted by the excellent Admiralty works on pilotage and navigation issued for the instruction of officers on the Australian station.

I do not propose giving a lengthy description of my passage by mail steamer—outward by the P. and O., and homeward by the Orient Line. These two companies are well known to the travelling public, and there is little to choose between them as regards speed, comfort, and general efficiency; but in view of the great and increasing competition with French and German lines, these two British companies will do well to look into small details, and carry out such improvements as will insure their continued popularity. A weekly service to Europe and the competition of two English lines are of such great advantage to the Australians themselves that they should make every effort to insure the continuance of the Orient Line, which, so far, has not been run with much advantage to the shareholders. In addition to mails and passengers, the steamers of these two companies carry large quantities of frozen meat, butter, and other produce for the English market. The British India Company has also an excellent service of steamers between England and Australia, which run North and have their terminus at Brisbane in Queensland; whilst the Shaw Saville Line and the New Zealand Steamship Company afford direct communication between England and New Zealand, these two latter lines taking the long sea route instead of using the Suez Canal.

When arriving on a new station, a naval officer's first care is to examine the charts and consider the facilities for navigation and also the lights on important points, headlands, or islets; and it is unfortunate that on Cape Lewin, the South-West point of Australia and the first point of land often made by vessels bound from Ceylon or the Westward, there is no lighthouse. A remarkable white patch near the Cape renders it unmistakable during the day in clear weather; but in thick weather, or at night, a lighthouse is much needed, and will, it is hoped, soon be erected, as joint arrangements

for sharing the expense have, I understand, been agreed to by Western Australia and some of the other colonies. With this exception the coast both of Australia and New Zealand is very creditably provided with lights, and would compare favourably with many European countries.

When visiting this now well-lighted coast, or cruising amongst the islands of the Pacific with good charts and all the modern helps to navigation, I often thought of Captain Cook and his gallant companions in their crazy little vessels of some 400 tons burthen: persistently exploring those tempestuous seas, with no lighthouses to guide or cheer them, and none of those charts and modern appliances which now make navigation comparatively easy. Cook's indomitable courage and perseverance in determining the position of an important point or headland were most remarkable: if blown constantly away from his position he would return again and again till he had accomplished his purpose. Hence the accuracy of many of his observations. I am sure that all English-speaking people—for Cook belongs to the whole race—will be glad to hear that he is well remembered in the Australian Colonies, and that a monument in a conspicuous place in Sydney is erected to commemorate the achievements of England's greatest navigator and explorer. The French, who, though frequently at war with England, have always proved themselves a chivalrous nation, also duly honoured the great English navigator. The then Minister of Marine gave instructions to the officer in command of the French Squadron in those waters not to molest Captain Cook, "for," said he, "France will not treat as an enemy the great navigator who has conferred such inestimable benefits on mankind." On the shore near Botany Bay is another monument erected to the gallant French explorer, La Perouse, who left Botany Bay in command of two French vessels of war in 1788, which were both eventually lost. It is a remarkable fact that Cook never entered Sydney Harbour, having sailed past the Heads and entered Botany Bay; thus, after all his hard work and many voyages, he was never rewarded by sailing up the best and safest harbour in the world.

I shall next consider the supply of coal. This is found in such abundance in many of the colonies, especially in New South Wales and New Zealand, that practically none has been imported from England for many years. Newcastle, some seventy miles North of Sydney, is well known for its extensive coal-fields, and most of the fuel used by the local steamers comes from this place. This coal, however, is not very popular with the Navy, in consequence of the thick black smoke it emits; and that preferred by us when at or near Sydney is the metropolitan, from a mine some few miles South of that city. At present, the best coal on the station is that put out from the mines at Graymouth and Westport in New Zealand, about 200 miles from Wellington; and if coal may be classified by numbers, and the ordinary Welsh coal be distinguished by the highest number 8, then that from Westport might be numbered 7, and that from the mines near Sydney 6. On the other hand, however, whilst this latter coal could be put on board our ships at Sydney for 9s. 6d. a ton, the New

Zealand would be more than double that price, even at Wellington in the near vicinity of the mine. Both Victoria and Queensland use their own coal on the Government railways, but it is not so good for marine purposes as that obtained in New South Wales. It is most fortunate for the Navy that there is abundance of good coal in the vicinity of such important places as Sydney and Wellington, the former being the headquarters of the Australian station, and the latter the seat of the New Zealand Government, and principal distributing port of that colony. Both these colonies produce excellent coal, which should lead hereafter to considerable wealth, if a good market can be obtained; at present, however, there is not sufficient demand for this sea-coal, and many of the mines are only able to work a few days in the week.

In docking facilities the Australian station is second to none. There are first-class docks both at Sydney and Melbourne, and also at Auckland, whilst there are smaller ones at Brisbane, Lyttleton, Dunedin, and other places. Her Majesty's ships are docked principally at Sydney, as the professional officers are quartered at that port; but when the cruisers merely require cleaning and coating, they are frequently taken in hand at the other ports, and it is well that all the docks should be encouraged, as they are of immense advantage to the Imperial Navy. Large sums of money have been spent in constructing these docks, many of which, notably the Calliope at Auckland, cannot be expected to make any adequate return for many years to come.

During my service in Australia I was much struck by the determination of all the colonies to have good harbours and facilities for loading and discharging cargo. A colony possessing a naturally good harbour, such as Sydney or Hobart, has made every effort to render them more perfect; and if there was no natural harbour, one has been constructed, usually with money borrowed from the mother country. It is said that Western Australia with a population in 1892 of about 70,000 has been expending a million sterling in making a harbour at Fremantle, the Port of Perth; and whilst I was on the station, the entrance to Albany Harbour was deepened to 30 feet to enable the mail steamers in future to enter the harbour during all tides. At Adelaide in South Australia much money has been expended in deepening the port and its approaches, so that vessels drawing 26 feet of water can enter or leave at high tide, and can be berthed alongside jetties in perfect safety. The mail steamers, however, always anchor in Largs Bay, an exposed anchorage, an arrangement which causes great annoyance to any passengers wishing to land or embark at Adelaide, and renders the transfer of mails and cargo to the shore difficult and, at certain seasons, dangerous. As Adelaide is in communication by rail with Melbourne, Sydney, and Brisbane, it is the port at which many passengers prefer to land, or embark from, when leaving for Europe, and it is to be hoped that arrangements may be made to enable the mail steamers in future to sail from the port itself. Having to wait for a tide might possibly occasion a few hours' delay, but this would be more than compensated for by the greatly increased facilities for landing or embarking.

At Melbourne a magnificent jetty has been constructed, which runs

right out into the bay, and alongside which the largest ocean steamers can be berthed with safety, as a channel has been dredged enabling ships of 26 feet draught to approach the pier. The mail steamers are always berthed alongside, and rails being laid along the jetty a train of trucks can be brought right alongside the vessel. I have on several occasions seen truck-loads of horses and live cattle from up country thus shipped straight on board from the train, which had probably conveyed them several hundred miles. The flag-ship was berthed alongside this jetty on more than one occasion when giving general leave, for the large expanse of water renders the anchorage in Port Philip a peculiar one. Though perfectly safe for shipping, a considerable sea gets up very quickly, rendering it difficult for ordinary boats to communicate with the shore.

We should remember that in modern ships there is no longer "exercise aloft," which used to occupy some of the superfluous energies of those on board, and there is also so little deck space that it is even difficult to find room for a walk; therefore, every facility should be given to enable both officers and men to take exercise on shore whenever the opportunity offers and their services can be spared.

In New Zealand large and commodious jetties have been constructed at Auckland, Wellington, Lyttleton, and Dunedin, giving every facility for the landing of cargo or shipping the produce of the country. At most of the ports of Australia and New Zealand vessels are loaded and discharged alongside, thus saving lighterage and much labour. The marks for entering or leaving the ports by day or night are unusually good, and at Brisbane there is a most elaborate system of lights and an excellent pilot service, enabling the navigation of the river to be carried on at night.

There are two large local steamship companies owning steamers trading between the different ports of the colonies and the islands, besides others running under different management. One of these two companies is called the Union Steamship Company, and has its headquarters in Dunedin, New Zealand. The other is the Australian United Steamship Company, commonly called the A.U.S.C., having its headquarters at Sydney. The Union Steamship Company numbers fifty vessels in its fleet, seven being over 2,000 tons burthen. The steam vessels belonging to the A.U.S.C. number thirty-six, five of which are of 2,000 tons or more. These local vessels appear to be largely officered by men of British birth, and many of the crews come from the British Isles. Practically, all the trade with the islands is carried on under the British flag, and I always found the managers and officers of the steamers most obliging in bringing me intelligence and in conveying mails to or from our cruisers.

It would be manifestly improper to speak in detail in this place of the defences of the Australasian ports. Suffice it to say that considerable attention has of recent years been given to this matter, and several of the ports, both in Australia and New Zealand, are fairly well defended. The guns, mounted for the protection of Melbourne and Sydney, are so well masked that they can scarcely be distinguished, and the entrances to these ports are further protected by mine defences, the mines being kept ready to lay down at short notice. I was given the opportunity, not only

of looking over the defences, but of inspecting the troops, and I never remember seeing a finer or a more intelligent-looking body of men than the local artillery composing the permanent Force of Melbourne, Sydney, and other places. Whilst fully recognising the necessity of securing such ports as Sydney and Melbourne against a possible raid of one or two armed cruisers, and admiring the military spirit which prompts the colonists to organise in addition such a considerable force of Volunteers, I believe the best defence, both for their ports and trade routes, is to maintain an efficient and powerful Navy. The colonists have of late years assisted in this matter by contributing substantially towards the maintenance of the so-called Auxiliary Fleet, Australia and New Zealand being the first of the self-governing colonies which have contributed towards the expenses of the Imperial Navy in their own waters, and the arrangement which was entered into whilst the late Sir George Tryon was the admiral on the station has worked fairly well and with little friction.

It is true that some of the colonists object to the arrangement, inasmuch as they contribute towards the expenses of the Imperial Navy without having any voice in its administration; and Mr. H. Armytage, late member of the Legislative Assembly of Victoria, in a letter to the *Times* of the 10th September, 1895, expresses a doubt as to the agreement being renewed at the expiration of the stipulated term of ten years. He says that the most serious objection to it is, that their own men and his own particular colony derive no practical benefit from the expenditure; and he adds "it would be infinitely better for us locally to drop the contribution, and maintain a cruiser of some description in which we could exercise our men in seamanship and so forth." He further proceeds to say that "the colonies don't want to fight; they want to trade," forgetting that the best possible way to avoid a war is to be prepared for it, and that the best way to promote and encourage trade is to insure the trade routes being kept open in war as well as during peace. This can only be done by a properly organised fleet of sea-going ships working harmoniously together under the control of one head. One sea-going cruiser stationed at Melbourne might possibly defend the entrance of that port; but what is to protect the trade routes of the various vessels bound to and from the port, and how is one sea-going cruiser to be kept efficient unless she has other vessels to manœuvre and compete with? Moreover, such a cruiser cannot be considered efficient unless she occasionally makes sea-voyages, which would necessitate her being often away from the colony, as Victoria has a comparatively small sea-board and few ports. I submit also that it is a mistake for any of the colonies to state that they get no direct benefit from the presence of the Imperial Fleet, as it is of great importance to them that their produce of wool, hides, meat, butter, and other articles should have an assured route in troubled times. With reference to the statement sometimes made that the Imperial Navy affords no opening of employment for their own men, I would observe that nominations are freely given to the sons of colonial gentlemen, and during the period of my command two of the flag-ship's lieutenants and two of the midshipmen were colonials, and were amongst the best of

the officers. The arrangement is, in my opinion, a good one, and the people of Australia and New Zealand are to be highly commended for thus coming forward to contribute towards the expenses of the Imperial Navy; it is, moreover, a most advantageous arrangement for the colonies themselves, and one that gives them more than their money's worth. Since the Chino-Japanese War a new Naval Power, which has to be reckoned with, has risen in the East. Suppose that in some future complications or alleged ill-treatment of a Japanese subject by Australians at any of the ports, a Japanese squadron were to appear off the coast to demand satisfaction, what would be the feelings of the colonists if they had no vessels of war in their own waters to meet them? If in years to come the Australian Colonies become one great confederation they will probably have their own Navy, but for the present they cannot do better than to continue to support the Imperial Naval Force; and whilst they contribute substantially towards its maintenance, I consider it reasonable that they should stipulate for a certain number of vessels to be maintained on the station, always bearing in mind that the disposal of the vessels is to be entirely under the control of the admiral, he having discretionary power to send a squadron or any single vessel outside the limits of the station in cases of emergency.

By the present agreement two ships of the Imperial Squadron are always to be maintained in New Zealand waters, and I see no objection to this arrangement if treated in a liberal spirit, but in any fresh agreement it should be understood that these vessels are liable to be withdrawn temporarily for the annual squadron cruise and manœuvres. It should also be fully understood that the vessels stationed there should, when necessary, visit the islands adjacent or geographically situated in New Zealand waters, though under the jurisdiction of some other colony or Power. On one occasion, when trouble was anticipated in Samoa, and a vessel was despatched there from Auckland for the security of the white population of Apia, the Premier of New Zealand took exception to her being sent off that division of the station, and requested that another vessel might be sent to replace her, although New Zealand professes to take greater interest than any of the other colonies in the affairs of Samoa, and, according to reports in the public press, actually proposed to take over the Samoan Islands from the three Powers under whose protection they are now administered.

The naval commander-in-chief always, if possible, accedes to any reasonable requests for the presence of a vessel if made through the governor, but any interference in the control or discipline of the fleet would entirely destroy its efficiency.

With the exception of the various governors who are appointed by the Queen, the Navy is the only official link binding the colonies to the mother country, and nowhere is the Navy treated with greater kindness and consideration. Free railway passes are granted to members of the Imperial Navy who wish to visit the interior, the officers are made honorary members of the clubs at the various ports they visit, and at the Head Quarters, Sydney, a sailor's home, called the "Royal Naval House," exists, second to no other institution of a similar kind all the world over.

This establishment, which was first started in a small way, and in which both Admiral Sir Anthony and Lady Hoskins took a warm interest, has been brought up to its present state of efficiency and comfort by the valuable assistance of the New South Wales Government, and by substantial contributions from wealthy Australians in New South Wales and other colonies. It is free from debt, and, under the supervision of the present excellent manager, is much appreciated by the men.

When the Colony of New South Wales was granted a Parliament and constitution of its own, certain lands and property at Sydney and in its vicinity were retained by England for the requirements of the Navy. The whole of this property has been estimated to be worth nearly a million sterling, and has since been surrendered to the New South Wales Government on the understanding that Garden Island should be retained in perpetuity by the British Admiralty for the use of the Navy, and that suitable works and buildings should be erected thereon at the expense of the colonists. The New South Wales Government further undertook to provide suitable quarters for storing the naval ammunition and explosives, and to provide a residence for the naval commander-in-chief. All these engagements have been fulfilled, and shortly before I quitted the station, Garden Island with its works and buildings was taken over by the Navy, and put in charge of the Resident Naval Captain at Sydney. On the island are excellent barracks, found most useful when ships are clearing out for re-commissioning or making good serious defects. Two cruisers can be berthed alongside the yard comfortably at the same time, the "Orlando" being able to lie alongside the jetty at any time of the tide, whilst on the jetty are sheer-legs, tested in my presence to raise 160 tons. There is on the island, in addition, an excellent factory and machine shop, boat-house, sail loft, carpenter's shop, torpedo store, repairing shop, and every facility for executing ordinary repairs by the ship's artificers. There are, besides, several firms at Sydney who undertake repairs of ships and their machinery; and the heavier work necessary to keep the vessels of the Australian Squadron efficient is put out to contract, the various firms being invited to compete by public tender. I may here mention that the "Orlando" (flag-ship) was refitted for her third commission shortly before I left the station, and some of the smaller cruisers were completing their third commission in Australian waters.

Men and boys of Australian birth are allowed, under certain conditions, to volunteer for the Royal Navy, but few take advantage of the opportunity, and of those who enter still fewer remain after their six months' probation is completed. Although on half-holidays Sydney Harbour is crowded with sailing-boats of every description, the true Australian-born does not appear to take readily to a seafaring life as a profession. This may, perhaps, be explained by the fact that in a continent of about the size of Europe, but containing not much more than three million inhabitants, men can find more profitable employment in developing the land resources of their country. Yet it is a melancholy fact that, in spite of immense territories and scanty population, hundreds of men, out of work, may frequently be seen idle about the towns

whilst they seek for employment, or pretend to do so. Many of these men are, of course, mere loafers and vagrants, who have no intention of working at all—a fact I have ascertained by actual experiment; but there are, doubtless, many others amongst them who, through sickness and other causes, are in real distress through no fault of their own. It must be understood, however, that the sufferings of the poor are much less acute than those of their brethren in England, since the climate is more genial, and the necessaries of life are absolutely cheaper. Whilst I was on the station, the New South Wales Government, in order to deal with out-of-work cases, started two labour colonies, placing the people on the land free of charge, and giving a money grant in addition, according to the size of each family; but I gathered that the Ministers were not altogether satisfied with the result of their experiment.

In 1893, the year of the great financial crisis, not only great inconvenience but much distress was felt throughout Australia and New Zealand. In Sydney and other large cities, anxious crowds, clamouring for the money they could not tell what to do with when drawn, besieged the banks, till, one by one, most of them closed their doors. In many cases people having a good balance at their bank were absolutely unable to obtain a shilling, whilst some who were in England or travelling on the Continent suddenly found themselves without the means of paying their hotel bills. At last confidence was restored, and the banks, which had been temporarily closed, re-opened under re-construction.

In 1893 very severe floods also were experienced, which caused much damage in Queensland. Brisbane suffered very severely, and the railway bridge across the river was washed away. The "Paluma," a small vessel temporarily lent to the Imperial Government for surveying duties, having dragged her anchors, was left high and dry in the botanical gardens; but a second flood succeeding the first, she was floated off again into the river, with but trifling damage.

In 1894 Mr. Stoddart brought out a team of English cricketers to play five matches against a united Australian team, and to carry out other local engagements. The interest taken in the international matches was very great; the ground was always crowded, and good play on either side was highly appreciated. The method of scoring and showing the state of the game is much more complete than that adopted in England; thus, in the important matches, every player's name is painted on a slip so that the names both of bowlers and batsmen are displayed in a conspicuous place and altered every time a change occurs. When a side has completed its innings, the names therefore of the whole eleven appear on the telegraph with the score against each name, and these names remain up till the fresh side goes in, when the total made by the eleven just out will be shown elsewhere, and the names of the other side will be put up as the men go to the wickets. No numbers are used, and no cards are printed or issued; indeed, there is no occasion for them, as the whole state of the game is evident at any moment to everyone on the ground. The result of the game as it proceeds is not only shown on the ground, but is communicated by telegraph to all the important newspaper offices, stores, and clubs,

and is exhibited publicly from the windows or walls of the two former places. During the progress of an international cricket match at Melbourne or Adelaide crowds of people may be seen in the streets of Sydney gathered round the newspaper offices, watching the progress of the game with such interest that they occasionally give vent to their excitement by enthusiastic cheers, as the record appears of a four stroke or the capture of a dangerous man's wicket, and this, in a game that is being played hundreds of miles away.

Let us now make a tour of some of the islands of the Pacific. Leaving Sydney in a North-Easterly direction for some 420 miles, we first arrive at Lord Howe Island, forming part of the Colony of New South Wales. The settlers numbered forty in 1877, but at the present time have increased to over sixty. Their one industry is the export of the seeds of a small palm which grows very luxuriantly on the island. These seeds are sold all through Europe, and from them are raised the Kentia Palms so often seen in our English drawing-rooms. The island is only five miles long and from one-third of a mile to one-and-a-half miles broad; and as there is no harbour for large vessels, a ship has to anchor or lay to on the lee side of the island if she wishes to communicate.

Leaving Lord Howe Island, and continuing in a North-Easterly direction for 480 miles, we come to Norfolk Island, one of the most beautiful islands I have ever seen, and which resembles a well-kept park. It is undulating and sufficiently well-wooded with the Norfolk Island pines, and those beautiful trees growing singly or in clumps add very much to the beauty of the landscape. It is an independent colony of Great Britain, the Governor of New South Wales holding a separate commission as Governor of Norfolk Island. This island is interesting as being one of those discovered by Captain Cook in 1774, and until the year 1855 it was used at different periods as a convict settlement. Many of the fearful incidents connected with penal servitude which Marcus Clarke relates in his "Term of his Natural Life" are said to have taken place at Norfolk Island; but what gives it a special interest at present is that the greater part of the residents are descendants of the mutineers of the "Bounty," who, 192 in number, were conveyed here from Pitcairn Island by the British Government in 1856. In 1859 several of these people became discontented, and returned to Pitcairn Island, where, I understand, they are doing very badly; whereas those which remained at Norfolk Island have done well, and have greatly increased in numbers. The Melanesian Mission has its headquarters there, and has constructed a village, a school-house, and a very handsome church to the memory of Bishop Patteson. The mission obtains boys and girls from the Solomons, Gilberts, and other islands, and after bringing them up as Christians, and giving them an elementary education, sends them back as teachers and ministers to their native islands. Though only five miles long and about three broad, the island carries a population of between 500 and 600 besides the natives belonging to the mission. Like Lord Howe Island, Norfolk Island possesses no harbour. It is a perfect paradise, with its lovely climate and charming scenery, and we left it with much regret.

Our cruise now takes us to the Fiji Islands, which were formally proclaimed a British colony on the 1st September, 1875. The natives, who at first gave the British Government some trouble, have now become orderly and peaceable, and appear generally on very good terms with the whites, which reflects considerable credit on the past and present administration. This group comprises, besides numerous islets, 155 islands, containing a total area of about 7,500 square miles, with a native population of about 120,000; but in giving the supposed numbers of the natives, it must be understood that it is only a rough estimate. There are two principal islands, and Suva, the capital and seat of government, is situated in the South part of Viti-Levu. The harbour is spacious and rendered absolutely safe by a magnificent coral reef, which forms a natural breakwater, and has a convenient opening by which vessels can enter.

The country is divided into provinces, and the natives are cleverly governed through their chiefs, who hold an annual meeting called the Bose Vaka Turanga, a sort of native parliament, which is opened by the governor in person. It is held each year at a different place, but in 1894 it was opened in Suva, when I had the good fortune to be present. The chiefs being assembled in a large native house, the governor requested one of them to open the proceedings with prayer, which he did, praying extempore, whilst all the others appeared to be devoutly joining. The governor's speech was then read in Fijian, and after *kava* had been made in a large bowl and handed round, the "Bose" was declared open, and we all adjourned to an open space to witness a species of war-dance called "Meke-Meke," in which about 1,000 natives took part, 400 in the first performance and about 600 in the second. These warriors had painted themselves with red or black paint, and being otherwise decked with feathers and pieces of coloured cloth presented a very fierce appearance. They were armed with clubs, which they handled with great dexterity, going through all their movements with the utmost precision, the whole number working together as one man, without any word of command.

The Fijians are very good sailors, and manage their canoes with great skill; but many of the chiefs now own European schooners or cutters, in which they visit the various islands. The chiefs and others, who had come to Suva to take part in the meeting and dances, came principally in these vessels, and during the week there was quite a fleet of schooners anchored off the Government House pier. One day they had a regatta amongst themselves, going outside the reef, and afterwards sailing round the "Orlando" crossed her bows as a winning post. They were much pleased at the judge being on board the flag-ship, and at a gun being fired as the winning boat crossed her bows.

The upper classes amongst the Fijians are a fine race, and as many of their words resemble words in the Malayan language they are supposed to have originally had some connection with the Malay peninsula. They are not given to work, and labour for the sugar estates and other industries has to be procured from India and the Melanesian Islands. The chiefs consider themselves superior in every way to

the people, as may be gathered from the following rather amusing story which I heard after my departure from the islands. The Wesleyan Missionary Society has had considerable success in the Fijian Islands, and has gained many adherents; but after the visit of the flag-ship some of the chiefs who belonged to the Wesleyan denomination came to the clergyman of the Episcopalian Church, and said they wished to be received into the Church of England. The English clergyman very properly told them he was not prepared to do this hurriedly, that they had been brought up as Wesleyans, and should consider well before they changed. They replied that they had thought it over seriously, and having noticed that the governor and the admiral belonged to the Church of England, considered that, although the people generally could worship as they pleased, they (the chiefs) ought to belong to the same church as the governor and the admiral. This story, however, must not be taken to imply that the Fijians do not value their faith seriously. That they are earnest Christians is proved by the number of native teachers who, some years previously, volunteered to accompany a white missionary in his perilous mission to New Guinea.

The Colonial Sugar Refining Company, whose headquarters are in Sydney, has much land under sugar cane, and two large mills at work. It also encourages others to grow cane, and buys the produce. At present, the company is able to dispose of all the sugar manufactured either here or in Queensland, in Australia and New Zealand; but shortly they will turn out more than is required by these colonies, and will have to find a market elsewhere.

Sir John Thurston, the present governor of Fiji, who is also High Commissioner of the Western Pacific, speaks the Fijian language, and probably knows more about the Pacific Islands than any other man living. His administration has been most successful, as is shown by the peaceable and, apparently, loyal condition of the natives; and yet the only armed force he possesses is a body of some forty constabulary, composed of Fijians, all armed with rifles, and acting entirely under his orders. Just before I reached Suva there had been a small difficulty or rising in the north part of Vanua-Levu, but the governor, who went to the spot in person, accompanied by the constabulary, soon stamped it out.

Owing to the quantity of rain which falls in and about Suva, tropical trees and plants grow with great luxuriance, the country in this respect resembling Ceylon. The principal exports are copra, sugar, and fruit, whilst enough tea is grown for home consumption. I may here mention that copra is the inside of the cocoanut which is cut out of the shell after it has been split in halves. It is partially dried, and is usually sent to Europe in bulk in sailing ships. At one time a large profit was made from this article, traders amongst the various islands buying it from the natives at £4 a ton and selling it in Europe for £10 or £12; but more frequent intercourse has, I understand, considerably reduced the profits. The liquor laws are rigidly enforced in the Fijian Islands, anyone, European or not, being heavily fined if caught supplying the natives with spirits; consequently drunkenness is almost unknown amongst them, and

yet the race is rapidly decreasing. The inhabitants suffer occasionally from epidemics, and it is said that over 20,000 were carried off by the last attack of measles. The Fijians are musical and fond of games, and on Saturday afternoons a certain number may generally be seen playing cricket with the whites.

Levuka was originally the capital, but of recent years the seat of government has been transferred to Suva. There is now monthly communication with England by ocean mail steamers *viâ* Honolulu and Vancouver, by which letters are received in about twenty-six days from London. As this line of steamers, the Huddart-Parker, have their terminus at Sydney, there is also monthly communication with that port, the passage occupying five days.

We have of recent years heard so much about the Samoan or Navigator Islands, that I think I need offer no apology in asking you to carry your eyes in a North-Easterly direction to that group which lies about 600 miles from Suva. They were rendered very famous in 1889, when they were visited by a severe hurricane, during which the American vessels of war "Trenton" and "Vandalia" were wrecked in Apia harbour, and the "Nipsic" was stranded. The German vessels "Eber" and "Adler" were also wrecked, and the "Olga" stranded; the British vessel "Calliope" alone escaping by steaming out to sea. One hundred and thirty lives were lost from the vessels wrecked and stranded, for the harbour being entirely exposed to the Northward, the gale caused such a violent current and heavy swell that those on the shore were unable to rescue many of the drowning men.

There are three main islands, which are very fertile and produce tropical fruits in abundance, so that the natives have no occasion to work for their living, and, consequently, all they do is to plant a few yams and other roots, or bananas. They are splendid sailors and swim like fish, being apparently as much at home in the water as out of it. They are Polynesians, and are a very interesting and picturesque race; the men are fine and well-grown, and the women pretty and gentle. The total number is now supposed to be only 30,000, for, as in so many other islands of the Pacific, the inhabitants are said to be yearly diminishing. A German company has large plantations in Upolu, near Apia, and has spent a considerable sum in building stores and jetties and setting up machinery. In addition to cocoanuts, they have hitherto cultivated cotton, but this is now to be entirely abandoned, and they intend in future to confine themselves to the cultivation of cocoanuts and the export of copra.

The islands were placed under the joint Protectorate of Germany, Great Britain, and the United States, and an Act, drawn up at Berlin in June, 1889, called a "Final Act for the Administration of the Affairs of Samoa," was put in force. By it the Islands of Samoa were proclaimed a neutral territory, and the three Powers recognised the independence of the Samoan Government and the free right of the natives to elect their chief or king. Apia and a certain surrounding district was formed into a municipality, a municipal council was established, and a chief justice appointed. The natives were ordered to pay a dollar a head per annum

poll-tax, and a revenue was further to be obtained from import duties at Apia, that being the only port of entry, but the treaty has not worked well. In many cases the natives refuse to pay the poll-tax, and as they are armed and there is no armed police force, the decrees of the court cannot be carried out. A considerable portion of the inhabitants also profess to be tired of Malietoa, the chief appointed king by the Powers, and wish to elect another; but, as they have little idea of abiding by the decision of the majority, it is doubtful if the election of a new king would bring peace, for it appears to have been the custom from time immemorial for the chiefs to fight amongst themselves. The residents of Apia are somewhat disturbed and alarmed by the rival parties of natives, both armed with rifles and constantly out watching each other; for, though probably neither side would wilfully harm the whites, there is no saying what would happen if they once began to fight; consequently two or more vessels-of-war are kept constantly at Apia to watch the course of events, and offer protection to the white population if necessary, but this state of things can hardly be allowed to continue. I must here remark, however, that every effort is made by the officers in command of the German ships to co-operate with our own in endeavouring to carry out the provisions of the treaty and prevent quarrels amongst the natives, so that the failure of the present arrangement cannot be attributed to any want of sympathy between the two nations. No United States vessel-of-war visited the islands during the period of my command. A land commission was appointed under the treaty to investigate and settle the title and claims to land made by Europeans or natives, and this work has been completed fairly to the satisfaction of both. It is also a matter for congratulation that the prohibition of the sale of intoxicating liquors to the natives has been carried out, and that these interesting people have not become addicted to drunkenness. It is unfortunate that the clause in the Act forbidding the sale of arms and ammunition has remained hitherto a dead letter. The American line of steamers which carry mails and passengers between Sydney and San Francisco call at Apia monthly, and during the last two years American time has been kept there. When I arrived in the "Orlando" on what we considered Monday, the 9th of July, the people of Apia were making it Sunday, the 8th, and the "Curaçoa" being present and anchored quite near us, we were in the peculiar position of carrying on our Monday routine while she was making it Sunday and performing Divine Service.

These islands were first seen by Bougainville in 1768, and called by him "les Îles des Navigateurs," from the skilful way in which the natives handle their canoes. The islands are very beautiful, and Upolu appears to be well watered by many streams running down from the hills into the sea. The so-called harbours of Apia, Safata, and others, are entirely formed by coral reefs, which afford partial shelter to vessels anchored inside. As these coral reefs are very plentiful in the Western Pacific, and are amongst the most beautiful and wonderful works of Nature, I may here offer a few remarks upon them.

Darwin says there are three kinds of coral reefs: the barrier, of which

the Great Barrier Reef of Queensland is the most remarkable; the circular, or atoll, which has usually a lagoon inside, and in which, through openings in the reef, vessels often find a safe anchorage, and the fringe, which immediately skirts some parts of the coast. Many so-called islands in this part of the world are nothing more than atolls originally thrown up by the coral polyp, and afterwards acquiring some soil and vegetation. Darwin also tells us that the coral dies if much exposed to the air, so that one does not find the actual coral reef above low water-mark. He also estimated that live reef-making coral did not exist at greater depths than 30 fathoms, but later investigations have discovered live coral at depths reaching nearly 100 fathoms, and Mr. Saville Kent, in his large illustrated work on the Great Barrier Reef, says, "there are not a few stony corals whose growth zone is coincident only with cold, deep water." I understand that some very interesting experiments on this subject are shortly to be carried out by members of the Royal Society in conjunction with some of our surveying officers.

The Barrier Reef, which skirts a considerable portion of the South-East Coast of New Caledonia, is a very remarkable specimen of that form of reef with numerous openings admitting vessels of deep draft into comparatively smooth water.

Before we quit this part of the station, I would ask you to cast your eyes still further to the North-East, and draw your attention to Penrhyn Island, on account of a rather peculiar event which occurred there soon after I arrived at Sydney. Penrhyn is an atoll enclosing a lagoon, but capable of supporting a considerable number of natives, who, like many other islanders, were desirous of possessing a European schooner, and commissioned a trader to purchase one for them, a considerable portion of the purchase-money being handed over to this man on the understanding that when he appeared at Penrhyn with the vessel he should receive the balance. After some delay the schooner, having been purchased in New Zealand, was taken to Penrhyn by the trader, who hove to outside and demanded the remainder of the sum due to him before he handed the vessel over; but the natives having heard that they had been over-reached, and repenting of their bargain, went outside in their canoes, seized the schooner, and brought her into their lagoon, demanding of the master the restoration of the sum they had previously advanced before releasing her. The case was referred to me, but Penrhyn being then included in the Pacific Station, I was unable to send a man-o'-war till I had obtained permission from the Admiralty. This permission having been obtained, the "Ringdove," with a commissioner from Sir John Thurston, was sent to investigate the case, but only to find when she arrived there that a cruiser from the Pacific Squadron had already called in and released the schooner. Since this event the limits of the Australian Station have been extended to include all those single islands, and now the boundary has been so altered, that it cuts through the Society Islands, running almost through Tahiti. Penrhyn with other islands in its vicinity were placed under British protectorate some years back; whilst the Union and Phœnix group, as well as the

Ellice and Gilbert Islands, have only been recently added to the British Empire. The Marshall Islands to the Northward have been taken over by Germany, having been declared a German protectorate in February, 1886. A resident Governor lives at Yaluit, the headquarters.

The Tongan or Friendly Islands are independent, and governed by an hereditary king, a native who has been educated at Auckland, and who only succeeded the late ruler in February, 1893. He was still under twenty when I visited this group in July, 1894, and is a very fine man, six feet three inches in height, and large in proportion. All the ministers are natives, and the native parliament was sitting during my visit; and as the present peaceful state of the islands seems likely to last, it is to be hoped that the natives may be allowed to continue to manage their own affairs. During the past twelve months about 1,000 of the inhabitants have died from an epidemic of measles, and the population of the whole group is now estimated to be only 18,000. They are Polynesians, said to be of the same race as the Samoans and the Maories of New Zealand, but they do not at all resemble the latter in appearance. They are all Christians, and appear devout in their worship, and are very fond of music and of singing together. On a Sunday afternoon, one may hear them singing hymns most lustily from various places of worship, many of the tunes being those familiar to us. Like the Fijians and Samoans the Tongans are not given to hard work, but they are fond of games, and the Tongan cricketers easily defeated an eleven of the "Orlando." Their fielding is excellent, and they go to the wickets in their bare feet and legs without any covering or pads. They will also undertake exciting work, even though dangerous, and Mr. Campbell, an Englishman who carries on whaling operations, told me he never found any difficulty in procuring crews for his whale boats, though a boat with four men had been lost the previous season. In carrying on the whaling industry from the shore in boats, the hardest work lies in towing the dead whale to the shore after it has been captured, and it is often necessary to keep a second boat by the carcass to beat off the sharks which invariably assemble in large numbers from all directions, and follow the dead fish into quite shoal water. In spite of every effort to frighten them away, much of the whale has usually been eaten before being towed to land.

The Tongans are of a lighter colour than most of the Polynesians, and consider themselves the *crème de la crème* of that race. Tonga-Tabu means Holy Tonga; and there is an amusing tradition of the Creation, told, I think, by Sir John Thurston, which relates that the Almighty first made a Tongan, then a pig, then an Englishman, and the rest.

There are some remarkable stones at a place called Kolonge, about a quarter of a mile from the coast and some eight miles from Nukualofa, the capital, which somewhat resemble those at Stonehenge in Wiltshire. The Tongans are an interesting and peaceful race, and the islands are well worth a visit.

Referring to the volcanic nature of the sea-bottom in the neighbourhood of these islands, I may mention that Falcon Island, which was a breaking reef in 1865, was pronounced 153 feet high by the "Egeria"

in 1889, and as having since sunk to 25 feet by the French vessel of war "Duchaffault," and is now reported by a small British vessel to be again only awash. Mr. Watkin, a missionary of thirty years' standing in Tonga, told me that he had seen it in violent eruption.

The Kermadec Islands away to the Southward were annexed by Great Britain in 1886, and now form part of the colony of New Zealand. The Cook Islands—the greater number of which were discovered by Captain Cook—are also under the protection of Great Britain, the New Zealand Government maintaining a Resident at Rarotonga, the capital. The Society Islands and those adjacent belong to the French. As already stated, the line dividing the Australian from the Pacific station passes through Tahiti, which island is supposed to have been seen first by Quiros, the Spanish explorer, in 1606. It was at Matavi Bay in this group that Cook observed the transit of Venus in June, 1769. Tahiti has also been rendered famous by its connection with the "Bounty" and the mutiny which took place in April, 1779.

Before proceeding to speak of other islands, I must allude to the extraordinary decline in population which is said to be taking place amongst the people inhabiting the islands of the Western Pacific. Quatrefage, a French writer, speaks of it in his work entitled "Les Polynésiens et leurs Migrations," on the progressive extinction of the Polynesians. He writes:—"Hawai, which numbered over 90,000 at the time of Cook's visit, has now only 29,000. Cook estimated the population of the Sandwich group at 300,000. In 1825 this number was reduced to 140,000, in 1839 it was scarcely 100,000, and in 1861 it was only 67,084.

"In 1769 Cook reported the Maories in New Zealand to be about 400,000. In 1849 they were reckoned at 109,000, and at the present time there are said to be only 40,000.

"Cook estimated the numbers in Tahiti in 1774 at 240,000. In 1797 the missionaries could only account for 50,000. The last official census taken in 1857 only gives 7,212 inhabitants."

It is difficult to explain this terrible depopulation which is said to be going on in many of the islands of the Pacific. In some of the less-favoured islands and very hot groups it is not surprising, as the land is poor, the water scarce and sometimes bad, which produces horrible skin diseases; but in the lovely islands of the Fiji group, and in the Samoan and Tongan Islands, which produce luxuriantly all that the natives require, there is no accounting for it. It is not drunkenness, as the Polynesians have not taken to drink; and the Maories, though once addicted to drunkenness, have given it up. I think, however, we must accept Cook's estimate of the population in his day with a certain amount of reserve, as I fail to see how he can have obtained reliable figures.

I am glad to be able to state that in all the islands administered by Great Britain, every effort is made to prevent the sale of spirits to the natives, and the strictest supervision is also exercised over the labour traffic. In past years the natives were often lured away from their homes and engaged as labourers, under false pretences, and without knowing where they were going. When returning, also in order to save time and

trouble, a vessel would often land a labourer at a wrong island—that is, not the one he belonged to, in which case he would stand a very good chance of being killed and eaten. The people in his own island, waiting in vain for the return of their fellow-countryman, would at last come to the conclusion that he had been murdered by the white man, and would in their turn murder the first white men they found in their power. Every British vessel now engaged in the labour traffic is obliged to be licensed, and to carry a Government agent on board. The natives perfectly understand where and for how long they are going, and enlist willingly. They are particularly well looked after in Queensland, and I heard a missionary acknowledge that there was a far better opportunity of teaching them Christianity when living in large numbers together on a sugar estate than when scattered in small numbers in their native islands. On one occasion, when I was at Brisbane, a labour vessel came in from the Solomons with about 120 labourers on board for Queensland. They were mostly going to the same estate, forty of them had been previously recruited, and were now coming back for a second time. Sir Henry Norman, the Governor, visited the vessel with me, and as we left the side, the "boys" gave us three cheers—in reality hideous yells, but seeming to show that they were happy and contented. We may rest assured, therefore, that the natives are well cared for, and must put down the yearly diminution of the islanders—for the Melanesians are decreasing as well as the Polynesians—to some hitherto unexplained causes.

Bishop Montgomery of Tasmania, when visiting the islands in 1892 for the Melanesian Mission, speaks of the wretched condition of the natives on some of the smaller islands, and states that they frequently have only brackish water to drink. Missionaries of all denominations appear to have had greater success amongst the islands of the Pacific than in many other places, for a large proportion of the natives profess Christianity, and partly through the teaching of the missionaries, and partly through intercourse with the white men they are every year becoming tamer and more civilised; so that some of the islands which had, until quite recently, borne a bad reputation may now be visited with comparative safety. One of the most civilising influences is a surveying ship, which remains some time in one place, and has boats and detached parties of men quietly engaged in carrying out their useful though laborious work. These men are in daily intercourse with the natives, and usually finish their season on the best of terms with them, the natives being only too glad to be able to dispose of some of their produce.

We will now leave this part of the station and turn to New Caledonia, the third largest island in the South Pacific, and treating Australia as a continent, is only surpassed in size by New Guinea and New Zealand. It is 290 miles long, and from 30 to 43 miles broad. It was discovered by Captain Cook in 1774, when the "Adventure" and "Resolution," after cruising some days off the island, penetrated the great reef and found an anchorage. Two French ships visited New Caledonia in 1788, under La Pérouse, but though they were sent to examine the island thoroughly, they made no settlement, and it was not till 1853 that the

French flag was hoisted. In 1863 the island was made a French penal settlement, and, with the Loyalty Islands, belongs to France. Nouméa is the principal settlement and seat of government, and contains a population of about 56,000. The port is safe and commodious and is strongly fortified, the garrison numbering 1,700 besides a force of gendarmes. There are at present about 9,000 convicts, and 5,000 to 6,000 *libérés*. The sight of these prisoners at work or marching about in gangs under the charge of warders has a most depressing effect. A convict band of about 40 musicians performs in public three days a week.

The New Hebrides were discovered by Quiros, the Spanish explorer, but the group received its present name from Captain Cook, who surveyed a part of them in 1774. These islands are now under the protection of France and England, and are administered by a joint commission of French and British naval officers in accordance with a declaration agreed upon between the two Governments, and dated 16th November, 1887. The agreement works fairly well, and I have much pleasure in stating that the French naval officers work cordially and loyally with our own. Most excellent coffee is grown in the New Hebrides, and there is no doubt they could be made very productive if steady labour were more easily obtainable. They suffer, however, very much from rats, some of the estates having to be abandoned on account of their depredations; and when walking through a coffee plantation, I not only saw enormous rats'-holes, but distinctly smelt the noisome creatures underground.

In September, 1894, the "Ringarooma," one of the third-class cruisers on the station, whilst steaming through the New Hebrides group at night at 9½ knots, ran right upon a coral reef and remained there in an exposed position for twelve-and-a-half days, when she was floated off by the exertions of her own officers and crew, having suffered comparatively little damage. Whilst on the reef her forefoot was quite exposed at low water, whilst about two-thirds of the afterpart of the vessel was afloat, ten fathoms of water being under her stern. All available anchors were laid out in about forty fathoms of water with chain or wire hawsers attached, and it was by constantly heaving these taut after getting everything out of the ship that she was eventually hove off the reef. When the news was brought by the "Dart" to Nouméa, the French vessel "Duchaffault" promptly proceeded to the stranded vessel's assistance and remained with her, making two gallant attempts to tow her off; but though she lost an anchor and cable by so doing she did not succeed in moving her, the ship, as has already been stated, being eventually rescued from her perilous position by the persevering efforts of her own crew, who stuck to the ship during the whole time, though had she slipped off the reef into deep water in bad weather the consequences might have been disastrous. Fortunately the weather remained fine, September indeed being usually the best month in these latitudes; and the ship having run on shore only nine miles from the best harbour in the group, the crew were able to land their stores and heavy weights without much difficulty.

The Santa Cruz group to the Northward will be remembered in connection with the death of the late Commodore Goodenough, for it

was here that he received the fatal wound from a poisoned arrow. Formerly the natives of the islands bore a very bad reputation, but they have much improved of late years.

We now come to the Solomon Islands, the Southern part of which group was only annexed to the British Empire in 1893 by Captain Gibson of the "Curaçoa." The Northern islands had been previously placed under the protection of Germany, and are held in connection with her portion of New Guinea. A considerable part of this group is still unsurveyed, but the "Penguin" under Commander Balfour has been engaged in surveying these during the seasons of 1893 and 1894. Large portions of the islands are unknown, but for some years natives have been obtained from them for labour, and many are at present employed on the sugar plantations in Queensland.

The Caroline Islands on the N.W. limits of the station were mostly discovered by the early Spanish explorers and navigators between the sixteenth and seventeenth centuries, and belong to Spain.

You will notice that practically all the numerous islands in the seas adjacent to Australia and New Zealand, with the one exception of the Tongan group, have been either annexed or placed under the protection of one or more of the Great Powers.

You may possibly be surprised that so much of my paper has been devoted to the islands, but many of the cruisers on the Australian station spend a considerable portion of their time amongst them; and the fact that the greater number of them have been placed under British protection will not tend to lessen the work of our ships in these waters. The mere act of annexing an island or placing it under the protection of the flag takes but little time and is performed without much ceremony. The vessel ordered on this duty is provided with a large number of Union Jacks, a form of proclamation to be used on each occasion, and interpreters to explain to the chiefs, if possible, the nature of the proclamation, and to learn from them any objection they may have to offer. Can an anchorage be obtained, the vessel anchors; or lays to off the shore, if there is none available. The captain lands with a small guard, and reads the proclamation to such natives as can be assembled. The flag is then hoisted on a pole or given to the chief, who is told to display it on the approach of any ship, and the island is annexed. Some of the chiefs evince much pleasure on being given charge of the flag, and the captain of one of our cruisers told me that on revisiting one of the islands he had previously annexed, he found the chief wearing the flag wrapped round his person. If on searching the island no natives can be found, the flag is hoisted on a staff, the proclamation read and then deposited in a bottle at the foot of the staff.

If after the annexation of a group of islands, a resident magistrate could be appointed who would reside in the group with a native police force enrolled to assist him in administering justice, there would be no necessity for the frequent visits of a vessel-of-war; but, until sufficient funds can be raised to build residences and establish permanent civilian officials, a system of rough law and justice has to be administered by naval

officers, and right well do they carry out their work; they not only have to settle disputes amongst the natives themselves, but are often called upon to arrange those in which white men are concerned; and as many of these white traders are subjects of other European Powers, they have to exercise great discretion and forbearance in carrying out their instructions. Thus, it may be seen that England's responsibilities are increased with every island annexed, and it will be well when each group of islands thus placed under British protection has a resident magistrate and government of its own, releasing Her Majesty's ships from their present continued cruising in those seas. The whole of the islands could of course, as at present, remain under the supreme direction of the Governor of Fiji, who is also Lord High Commissioner of the Western Pacific, and who would visit the islands when necessary in the cruiser allotted to that part of the station.

In conclusion, I must express my grateful acknowledgments to the Governors of the seven colonies of Australasia and New Zealand, and to the respective ministers and officials of all classes for their courtesy and assistance in carrying out my duties. My thanks are specially due to the New South Wales Government for their ready acquiescence in completing the Naval Yard at Sydney, and for liberally responding to all appeals made to them for the convenience and welfare of the Navy in Australian waters.

The feeling between Australasia and the Mother Country appears to me to be excellent. Long may it remain so, and long may the people of the two countries continue to work harmoniously together under the same old flag. It is not an uncommon thing to hear small children born in the colonies, and whose parents were also probably Australian born, speak of England as "home"; thus one day when playing golf on the links near Melbourne, the little boy who was carrying my clubs asked me "what sort of links they had at home," meaning, I discovered, by "home" the old country.

"Advance Australia" is a noble motto, and one with which I heartily sympathise. Why should we not, however, all advance together as one united people, keeping our ranks solid and well closed up, showing a determined though peaceful front, and thus helping on the further spread and development of the Anglo-Saxon race!

The Hon. Sir SAUL SAMUEL, K.C.M.G., C.B., Agent-General for New South Wales: It was not my intention to have addressed this meeting this afternoon; but as there is an idea in some English circles that the Colonies are wanting in loyalty, and that they have never contributed one shilling towards the defence of the Empire, I deem it my duty as the representative of one of the leading Colonies to refute such an idea as emphatically as I can, and perhaps you will allow me to tell you what the Colonies have done, beyond that which the gallant Admiral has told us to-day. They have incurred an enormous expenditure in building fortifications, and by erecting docks capable of taking in the largest ships; and they have established at Garden Island, Sydney Harbour, a naval depôt which has cost New South Wales over £250,000. Is that not contributing towards the defence of the Empire? Without these docks our ships would be of no value there. I have thought it my duty to offer these few observations to correct a mistake which seems to prevail that the Australian Colonies have not contributed towards the defence of

the Empire. In no parts of Her Majesty's dominions are there more loyal subjects than in her Colonies; and that was evidenced lately by the loyal messages which came from the Premiers of the Australian Colonies, messages which were received in every part of Her Majesty's dominion with the greatest possible gratification and pleasure. I should like to have referred to some passages in the gallant Admiral's address; but I do not care to occupy your time at this late hour of the afternoon. We hear a good deal sometimes of the number of naval officers who marry our pretty girls, but it is always a source of pleasure to me to hear of these happy unions between our own sailors and the ladies of the Colonies. It is only another tie that binds our Colonies to the Mother Country, and I hope we shall see this tie strengthened in every possible way.

General Sir HENRY NORMAN, G.C.B., late Governor of Queensland: As the very latest of the Australian Governors who has returned to his native country, I must first express the great pleasure with which I have heard the paper read by my friend Vice-Admiral Bowden-Smith. I am quite sure that the very friendly tone that has run through his paper with respect to the Australian Colonies will be read with great gratification by the people of those Colonies. The friendly feeling manifested on all occasions by the people in the Australasian and New Zealand Colonies to the Navy is most marked. The arrival of a vessel-of-war at any of the ports is always hailed with delight, and the officers and men are treated with the greatest kindness and hospitality. It was my good fortune in 1891 to accompany Admiral Lord Charles Scott in his flag-ship to meet the seven vessels of the Australian Auxiliary Squadron when they arrived at Thursday Island, the first Australian port. In coming down the coast to Brisbane, at all the ports which were visited by the vessels of that squadron they were received with enthusiasm and treated with much—I might almost say too much—hospitality. I believe that the Australian Colonies are glad to have that squadron, and it is my firm belief that when the time arrives at which the present arrangement between the British Government and the Australian Colonies with respect to that fleet comes to an end, some other arrangement will be entered into which will at least be as beneficial to the Empire as the present one. In many ways the presence of that squadron and of the vessels of the Royal Navy generally is an immense advantage, and I am quite sure that it is one that is valued by the people of the Colonies. The Governors also, are always able to ask for assistance in any matter from the Admiral of the station, who is always their most ready and most trusted adviser in various questions which appertain jointly to the Colonies and to the Royal Navy. The Admiral has alluded to the lighting of the coast of Australia, which he says is quite equal to that of many European Powers. I am glad to believe that the lighthouse, the want of which he deplores, is in process of erection at Cape Lewin, and I hope it will soon be ready to be lighted up. With regard to the immense long coast of Queensland, two thousand miles, I have often been told by officers of the Navy and of the Mercantile Service how splendidly it is lighted, and not only the coast, but the various rivers which are frequented by ships. I think it is only right to say that this excellent lighting is mainly due to the exertions of an officer of the Royal Navy, Captain Heath, who was many years employed by the Queensland Government. The Admiral alluded to the fact that that wonderful explorer and navigator, Captain Cook, was still borne in the memory of Australians, and referred to the fact that a monument is erected to him in Sydney. It is an interesting fact, and one perhaps not known to everyone, that as lately as the year 1889 a monument in memory of Cook was erected in Cooktown, which is named after him, very near the spot where he had to beach the "Endeavour," in what is now called the Endeavour River, after she had been so seriously damaged by very heavy weather in that then uncharted sea, on the rocks of the Barrier Reef. The Admiral has alluded to the fact, which I am afraid is true, that the Australian native is not much given to a seafaring life.

That is partly due, I think, as far as I have been able to ascertain, to the fact that the emigrants to the Australian Colonies have not come in very large numbers from the maritime population of Great Britain and Ireland. Also, no doubt, for those men who will work, the wages on shore are much higher than the payment given on board ship. I think myself it would be very well worth trying to have a training-ship, under the control of the Royal Navy, in Australian waters, to which probably boys would go, who would in time become seamen and visit various parts of the world, and eventually settle down in Australia on the pensions they would receive from the British Government. I do not think that this is a proper occasion to say anything about defence, or about federation, or non-federation. I can only say that we may rely upon it that Australia has enormous resources, most of which are at present only partially developed. The lessons she has had in the past will, I believe, lead to a sound and prudent administration of the finances. I might add that during the six and a half years I was Governor of Queensland I visited every part of the country, and everywhere I went, I saw very many enthusiastic demonstrations of loyalty, and I nowhere witnessed any act or speech that was disloyal; and, I believe, that my experience is in accord with that of all the Governors who have served in the Australian Colonies.

The CHAIRMAN (The Earl of Hopetoun): I think that our gratitude is due to the Admiral for the very interesting paper which he has read to us. I do not know that there is anything of a very controversial nature in the paper; in fact, I think the Admiral has dealt with one or two subjects, which might have been controversial, in a most skilful and tactful manner. Really, the only subject that seemed in any way likely to promote discussion is the question of Federal Defence. With regard to this question of Imperial Defence, it is a very large question, and I do not think it is one we ought to touch on here to-day. I think the present arrangement, by which the Colonies contribute a very reasonable sum towards the up-keep of the Imperial Navy, is on the whole a very good one. I do not say it is a perfect one, but nothing is perfect in this world. Possibly the wisdom of our statesmen in Australia and the wisdom of our statesmen at home may, at some future date when the present agreement comes to an end, devise something which will work better; but I do not think that public opinion, either in this country or in Australia, is ripe as yet for any large scheme of Imperial Federation and Defence. I hope and trust that some day it will come, but at present I think we must look at it as a thing of the future. I was very glad indeed to hear Sir Saul Samuel remind the meeting of the great benefits which the Australian Colonies have conferred upon the Imperial Navy. I look upon these well-fortified coaling stations, these harbours of refuge like Melbourne and Sydney, to which our merchantmen, and also our men-of-war if hard pressed, could go for shelter, as infinitely more important to the Navy than a paltry hundred thousand pounds or so, contributed to keep up one or two ships. When we are considering this matter I think we ought not to lose sight of this fact. I do not want to keep you any longer, but before we separate I should like to say something in support of what Sir Henry Norman said. I had nearly six years' experience in the Colonies. I know — of course, we all know—that there, as elsewhere, is a small proportion of the people who are dissatisfied with the form of government under which they live. They would be dissatisfied with any form of government under which they might live. It has been so since the time of Moses, and it will be so to all time; but I say, without fear of contradiction, that among the great majority of the people of the Australian Colonies there is a feeling of intense devotion to the Queen; and, although they are jealous, and rightly jealous, at any outside interference with their local affairs, they are thoroughly loyal to the British tie. I have very great pleasure indeed in asking you to accord a very hearty vote of thanks to Admiral Bowden-Smith for the paper he has just read.

# THE DIFFICULTIES OF THE TACTICAL DEFENSIVE, AND HOW TO MEET THEM.

*By Major C. B. MAINE, R.E.*

Friday, May 15th, 1896.

General Sir RICHARD HARRISON, K.C.B., C.M.G., R.E., in the Chair.

## PART I.

BEFORE entering into the subject of these lectures, I must ask your indulgence to explain their origin. On the 14th November, 1895, Lieut.-Colonel G. F. R. Henderson, Professor of Military Art and History at the Staff College, gave a lecture at the School of Military Engineering, Chatham, on "The Use and Abuse of Field Entrenchments," in which he showed that their true use was as "pivots of manœuvre." Subsequent meditation on his remarks on this and other points impressed me with the fact that Colonel Henderson had made known a great military truth, and had indicated the only way of carrying out the defensive in a satisfactory manner. My meditations on Colonel Henderson's text are now being offered to you for your consideration, and I may say that they have had the advantage of Colonel Henderson's perusal and kind approval, save on one or two points. When Colonel Henderson's lecture is published, as it is to be, you will see how indebted I have been to him for much that I have to say to you. He drew the large outlines, and I have endeavoured to fill in details between them. And I frankly admit that if it had not been for Colonel Henderson's lecture I would not have been here to-day speaking to you on the subject we are going now to consider.

The subject which we have to consider, namely, the defensive, ought to be considered separately in its two branches of strategy and tactics. But time will not allow me to deal in any way with the strategical defensive, the study of which should never be undertaken until one has thoroughly grasped what is entailed in the expression "the tactical defensive." The reason for this is plain—namely, that it is very necessary to understand the weapons and means that we have available for use before deciding on what our larger operations should be; and, while considering the subject of the defensive, we must ever bear in mind that the subject is only a relative one, and cannot be properly considered apart from the offensive. Although I do not intend to deal with the strategical defensive, yet the tactical defensive cannot be altogether

separated from it, and consequently I cannot help making allusions to it from time to time. Too many writers, in dealing with the defensive, treat it with a very light heart, as if it was the simplest question in the world. To-day I intend to bring to your notice, so far as an hour's lecture will permit, some of the difficulties connected with tactical defensive questions. A difficulty recognised is partly overcome, and therefore if we make a frank examination of the difficulties which surround the defensive we have gone a long way towards ascertaining the proper way for dealing with them.

The question of the tactical defensive, and the arrangements to be made for it, fall within the province of every officer, for it is not merely an engineering question; it is primarily a tactical question, and must be dealt with as such. The defensive is an extremely important matter for us to consider, because the tendency in England is to look to the defensive (which depends essentially upon the use of material means and cover) as the best attitude for us to adopt with the small forces that we can put into the field. Indeed, this tendency is to be found in all small armies. But with us the defensive has grown into favour from the successful use made of it in the Peninsula War and Waterloo Campaign by the Duke of Wellington. That great general, however, also fought a number of offensive campaigns and battles which we seem to have forgotten; and, except in the case of siege warfare, and in cases like the defence of Chitral, where a few troops are shut up in a confined locality by a large number of assailants, I cannot call to mind any case in which British troops acting on the defensive have fought behind entrenchments. I do not mean to infer from this that they ought not to do so in the future, for since the last great wars between European nations there have been important changes in the armaments of both artillery and infantry, which may necessitate in the future the employment of entrenchments to a certain degree by all troops, even by British troops, when acting on the defensive in field warfare.

For want of real practical experience, the subject of the defensive is usually treated by English writers as an academic question, but by such a treatment the difficulties surrounding the problem are entirely lost sight of, for these difficulties really lie in the details that have to be settled when we apply the problem of defence to a given spot. It is impossible to see what should be done in any locality from the map alone.

Many of the difficulties that surround the discussion of any subject lie in the differences that exist in the fundamental principles that the various disputants accept as the axioms on which they work and think, and which they further *assume*, unconsciously, no doubt, to be those accepted by everyone else. To avoid any chance of misunderstanding from this cause, I must ask you to forgive me if I begin my subject by stating briefly, as it were, my first principles or axioms, in order that you may understand the ground-work of ideas from which I start. To begin with, "What is war?" To me, in *its outward aspect*, war is the contest between two nations in which one seeks to impose its will on the other by annihilating the means of resistance of the latter. These means of resistance are :—

1. The armed forces of the enemy; and
2. His means of keeping them supplied with men, horses, food, ammunition, guns, clothing, etc.; that is, with everything required to maintain the enemy's armed forces as such.

The annihilation of these means of resistance cannot be effected without *movement*, and, consequently, *the spirit of war is essentially offensive*,[1] both as regards strategy and tactics; and it must ever be remembered that offensiveness is a characteristic that can only exist when we are dealing with impressionable men.

The armed forces of the enemy are primarily composed of *men*, imbued with all the passions and hopes and fears natural to human beings; that is, are composed of men with nerves. These men are endowed in varying degrees with physical energy, mental energy, and moral energy, which energies not only have a certain value in themselves which, however, are liable to hourly change, but, also, they are closely inter-related with one another, and so affect one another, as they each vary. And the armed forces of a nation are first organised, and then (*a*) drilled to increase their physical energy, (*b*) trained or instructed to increase their mental energy, and (*c*) disciplined to increase their moral energy.

Hence, in *its inward aspect*, war generally, and a battle especially, may be defined as a contest between the variable moral, mental, and material forces possessed by two opposing hostile bodies of men, each of whom is more or less working in the dark, and is trying to wear down and destroy the moral, mental, and material forces of its opponent, while endeavouring to conserve its own similar forces. This aspect of war and of its various acts is, in my opinion, of such vital importance that it should be burnt into the mind of every officer and leader.

The fundamental ideas of the whole military art may be summed up, in the words of the late Lieut.-General C. B. Brackenbury, into two simple principles.[2]

1. Soldiers are not machines, but human beings with legs, and stomachs and nerves, and a moral sense. To obtain success in war it is necessary to develop their muscles, but not to fatigue them; to fill their bellies before asking hard work from them; to quicken their nervous energy, while taking care not to exhaust it; and to raise their moral tone by every possible means, while depressing, as far as may be, that of the enemy. Strong men will faint, die, and even weep in war from pure exhaustion, and lose courage. The moral sense is equally capable of many stages between heroism and collapse of courage. The quality of a good officer will be shown by his power of keeping his men in good heart and strength as long as possible, while bowing down the spirit of the enemy. Each man has a certain fund of nervous energy, which should be economised like food or ammunition, but which, unlike them, cannot be replaced in a moment.

[1] Before such an audience as this I do not think it necessary to define such terms as offensive, defensive, etc.

[2] See the Preface to "Field Works," by Colonel C. B. Brackenbury, R.A.

2. The whole art of war, both in strategy and tactics, is to be superior to the enemy at the right time and place. This superiority may be either that of greater numbers, superior skill, better physical conditions, or higher moral tone. Some of these advantages may be secured by the leader at the time; others can be prepared in peace-time.

It cannot be too strongly urged that to assure the certainty of victory we must endeavour to destroy weak forces of the enemy by stronger forces of our own, stronger whether in armament, numbers, discipline, etc. Equal or inferior forces may be able to snatch the victory from the enemy, but certainty can only be assured by the above rule, that is to say, so far as human preparations can be certain; and this condition of local superiority at a given place and time can only be secured by stratagems, rapid marches, etc. All great generals, whether superior or inferior in numbers to their opponents, or whether acting strategically on the offensive or defensive, have always acted on the great principle of war, to concentrate superior numbers on the field of battle. If their own army had the superiority of numbers, then their task was comparatively easy; but if their army was inferior in numbers in the theatre of the war, then their genius showed itself by the means they adopted—stratagems, rapid movements, etc.—to compel the enemy to divide his forces and then to fall on them and beat them in detail, if they could not already take advantage of any existing dispersion among the enemy's forces. They relied more on the marching powers of their troops, on their skill in misleading the enemy, and on boldness, energy, and the use of moral forces, than on the fancied security afforded by remaining stationary on the defensive in fortified positions. But, even allowing all this, there have been cases when great generals have adopted the defensive attitude, and made use of such positions, and consequently it is the duty of the military student to find out why this was done, *i.e.*, for what purpose the defensive was made use of, and how far it was relied on. These points I propose to deal with next week in the second part of this lecture, while to-day I intend to first bring to your notice certain details affecting the application of the defensive attitude to the ground.

In dealing with the subject of the tactical defensive, we must assume certain conditions on which to base our studies, and consequently I shall assume, as existing, the usual conditions of ordinary European country, clear daylight, and not too great a difference between the strengths of the contending forces.

War involves movements of troops that culminate periodically in battles. But let us note what occurs during a battle among the troops of *both* sides. The troops on each side are not mechanical machines; they are formed of flesh and blood and nerves. To me, this is a crucial point to bear in mind during the whole discussion. The moral, mental, and material powers of the troops are ever-varying quantities. But it is on the value of these factors that the fighting value of the troops depends at any moment. But chief among these factors are (1) the organisation of the troops with the power of direction and control that it gives; and (2) the moral force or discipline which, in the face of danger and death,

holds the troops together, and enables them to advance or to hold their ground and refuse to give way. Hence *the object of each side in war, and especially in battle, is* (1) *to disorganise and* (2) *to demoralise the enemy, that is* (1) *to break up his organised units, and so to render them incapable of direction and control, and* (2) *to frighten them into retreat or laying down their arms.*

In strategy an army can be disorganised and demoralised by depriving it of its means of existence, and by defeating it in detail. But the means of disorganising and demoralising the enemy on the battle-field are (1) fire and (2) shock; that is (1) by distant destructive action, and (2) by the close application of brute force. This statement gives both the relative *rôles* of fire and shock and their sequence. By fire or distant destructive action we prepare the way for the shock or close decisive action. The latter is essential, even if the threat only of it can be made. The fire-action is general in its application along the whole front, while the shock-action is only local in its application, though its effects spread right and left with rapidity. The efficiency of modern projectile-throwing weapons is such that one side is nowadays compelled to reduce the other to a state of nervous pulp before it can attempt to assault it with the bayonet in clear daylight, leaving out of consideration the question of surprises.

As a rule, neither side desires to take up a defensive attitude for battle purposes. One side has the offensive attitude, and the other has the defensive attitude, forced on it by the conditions of the case. But every battle fought in clear daylight and open country, except those decided by surprise, may be divided up into four phases, more or less distinct from one another:—

1. The period of reconnaissance.
2. The period of distant preparation by artillery and infantry fire.
3. The period of decision by brute force.
4. The period of subsequent pursuit or retreat.

During these phases *the object of the side acting on the offensive* is to prepare the way for the decisive brute-force assault by means of fire so directed as to destroy the defender's desire to resist, or capacity for resisting, a bayonet assault. And *the object of the side acting on the defensive* is to minimise the effect of the enemy's distant fire preparations, while also destroying by fire the assailant's power of applying brute force, or even his desire to assault, or to stand an assault; and then, having done this, to counter-assault him with the bayonet. For these purposes, cover, both natural and artificial, is made use of. The technical aspect of cover has, in the past, given a false view as to its use. Many have got to look upon field entrenchments as a subject of its own, more or less wrapped up in mystery. This view is an absolutely false one, for the use of "battle-field" cover is part and parcel of the ordinary employment of troops on the field of battle. Hence, in taking up a defensive position, the first thing to be done is to place the troops as if there were no works at all; and then, after that, to try and arrange for such cover as may be considered necessary. Of course, the nature and amount of the cover made use of depends on the relative numbers, training, and quality of the troops on each side, on the

arms in use by both opponents, and on the time, tools, and materials available for use at the time and place.

An army is not a collection of independent arms. It is an organism in which the various arms are mutually dependent on each other for success and for the triumph of the whole force. This is a vital principle. Cavalry and artillery are not, in the highest sense, auxiliary arms to the infantry. They are part and parcel of a single fighting organism in which one arm or the other is more prominent for a while at different stages of the battle. The only true auxiliary arm is the Engineer arm, which is essentially a handmaiden arm; and, being a handmaiden arm, it should thoroughly study and understand the requirements of those whom it has to serve. Artillery, using distant fire only, is the leveller of obstacles, moral and material. Cavalry, using mobility and brute force, acts both as the senses—*i.e.*, the eyes, the ears, the touch, smell, and taste—of an army before battle, and also as a "hammer" in battle; while the infantry partakes somewhat of the nature of each. But infantry has not the same power of distant fire-action as artillery, nor the same power of mobility or close shock-action as cavalry. Hence, each of these arms supplements the weakness of infantry; but neither cavalry (which has no fire-power to speak of) nor artillery (which has no shock-power) can fulfil their true *rôles* alone. They only find their fullest power when acting in conjunction with one another and with infantry, each arm supplementing the weak points of the others; for it is the mutual self-sacrificing action of the different arms that is essential for obtaining the best results, and consequently is one of the secrets for securing victory.

From what has been said we see that the spirit of war demands that both sides should take the offensive. As a matter of fact, only one side does this. Why? Because the political, strategical, administrative, and tactical circumstances of the case forces one side—whether it desires it or not—to act on the defensive. So that the choice of the offensive or defensive is not, as a rule, a free one. Whichever side at the moment of collision is relatively inferior from strategical, administrative, or tactical considerations, that side adopts the defensive; not because it desires to take up this attitude, but because it cannot help it. Political reasons also may demand the defensive as a matter of policy.

The offensive in war is the sword; the defensive, the shield. And to win in war, the sword must be used. The purely defensive can never win. If so, why, then, is the defensive attitude ever adopted?—why does the weaker side adopt the defensive?

Before answering this question, let us for one moment consider the subject of *cover*. All cover is intended to enable the troops behind it to carry out their duty more effectively than if the cover did not exist. This object is chiefly effected by the power that the cover has of reducing the effects of the enemy's fire; either by making it more difficult for the enemy to aim, or by reducing the size of the target to be hit, or by offering an obstacle that his projectiles cannot penetrate. In this way cover economises troops, as it reduces the losses that have to be made good by troops held in reserve. At the same time, the cover made use of

must not hide the enemy from sight, nor prevent the troops placed behind it from using their weapons effectively. Further, cover must not hinder free communication, nor prevent mutual assistance being rendered to each other by the different arms. The corollary of this statement is, that we should deprive the enemy of all cover that will give him these advantages.

The defensive essentially means the use (1) of a stationary line of fire, and (2) of cover for the men and horses. The first of these factors ensures a steadier delivery of the fire which is more under control, a better ammunition supply, and, if the ranges are measured, an effective fire at considerable ranges. That is to say, the first of these factors means an increased efficacy of the fire of the defence. The second of these factors means a reduced efficacy of the fire of the offensive. Both of these are important conditions *so long as the enemy knocks his head against the defenders' front*—a very important proviso to bear in mind. And as fire efficacy and decreased losses are gained, it follows that when infantry stands on the defensive a fewer number can produce the same fire effect as a larger number of equally good troops acting on the offensive over open ground. This remark does not apply to the artillery, because the artillery on both sides fights from stationary positions. Hence the artillery of the defensive has not the same material advantage over the artillery of the offensive as the infantry has in its special case.

Thus, from what has been said, we see that *the primary object of the defensive* is to enable a small body to effectually resist a larger one until the latter has been so weakened that the former can attack it successfully; that is, until the relative strengths are inverted.

*The secondary object of the defensive*, and which is one that grows out of the primary object, is to enable a body to gain time by its power of resistance, so as to allow of the free action of another body acting elsewhere, or which is coming up to reinforce it.

On the proper execution of these two objects lies the whole secret of the successful use of the defensive attitude. In both cases we get a saving or economy of troops, but at the cost of the loss of the offensive power of the force, as a whole, for the time being, and this fact should never be lost sight of. And it should be burnt into the mind of every officer that *the defensive should only be considered as a preparatory attitude for a subsequent offensive movement to be made when opportunity offers a reasonable chance of success.*

As has already been stated, it is impossible to adequately deal with the defensive without considering, at the same time, the offensive; and, consequently, we must briefly refer to the relative advantages and disadvantages of these two attitudes.

The advantages of the tactical offensive are, that the assailants gain the initiative in making movements, and can choose the time and place of assault; they gain also the great moral effect produced by forward movement, and by being able to lay down the law to the defenders; further, the offensive alone can procure decisive results.

The disadvantages of the tactical offensive are, that the troops of the assailant have to continually move forward, and thus have to expose

themselves to the enemy's fire, suffering much loss, and to keep changing the sighting of their rifles for imperfectly guessed ranges; the rapid movement of the advance makes the men breathless, and so reduces the efficacy of their fire; reinforcements are hard to effect without mixing units, which only leads to loss of control; and it is almost impossible to keep an advancing body of men effectively supplied with ammunition.

The advantages of the tactical defensive are, the selection of the ground to fight on, and its fullest utilisation for battle purposes; the position can be strengthened by field defences; the men do not undergo any physical exertion to disturb their aiming, but fire from a stationary base over known ranges, and thus their fire should be very efficacious; the men, being covered, should not suffer much from the enemy's fire; the supply of ammunition is easy, while stricter supervision can be maintained over the fire, which is also easier to control; the disposition of the troops is concealed, and the defenders have a complete knowledge of the battle-field.

The disadvantages of the tactical defensive are, the uncertainty of knowing the direction of the enemy's attack; the bad moral effect of the men having to remain for a long time stationary under the disturbing effects of the enemy's fire and of seeing him gradually advance; and that the defenders have to follow the moves of the assailants. These disadvantages, however, can be largely minimised by making use of sorties or counter-strokes, which should form the soul of the defence from the moment that the enemy arrives at about 400 or 500 yards from the position.

Thus we see that *the advantages of the offensive are chiefly of a moral nature; while those of the defensive are of a material nature.* And as the offensive alone can procure decisive results, and as the attack is easier to carry out than the defence, every defence that seeks for decisive results must, sooner or later, pass to the offensive, both to gain the desired decisive result, and also to shake off the difficulties that surround a defensive attitude.

Many advocates of the tactical defensive rely on the supposed deadly effects of modern weapons, and they also suppose—involuntarily, no doubt—that these deadly effects are inflicted on one side only, namely, on the side taking the offensive. Those who do this forget three things :—

1. That the contending forces are composed of impressionable men, and that, therefore, the defenders get demoralised as well as the attackers.
2. That both sides are in considerable ignorance of what the other side is doing, or has done. This "fog of war" must never be forgotten, nor also the fact that the way to clear it away for one's self, and to increase it for the enemy, is to push forward, or take the initiative. The same remark applies to strategy, and it is here that the character of the leaders comes so prominently into play. The offensive lays down the law, the defensive only follows suit; and if the defensive wishes for a successful result it must take

the offensive whenever occasion offers a favourable opportunity.

3. That as the battle is only one way of annihilating the enemy, and as the assailants may march round the defenders and cut off their supplies, and so starve them into submission, a marching force can play round a stationary one if led by a skilful and bold general.

Consequently, the commander who deliberately takes up a defensive position with the determination of fighting it out with the enemy on that one spot, will, unless the circumstances of the case are extremely favourable to such a decision, lay himself open to very serious disaster if he is opposed to a well-trained enemy led by an energetic general; and therefore, although a defensive attitude may be decided on as a mode of temporary action, yet the actual locality on which it is to be applied should only be looked upon as conditional to what may take place. And here we meet with a most serious difficulty that the defensive has to accept—it must be prepared to fight, and yet be prepared to retire in the face of a pursuing enemy to another position further in rear, or to a flank. The first great difficulty for a defending general is to determine whether the enemy will attack at all, and if he does attack, his next difficulty is to determine the direction of the enemy's decisive blow. Wellington at Waterloo, and Bazaine at Gravelotte, both came to a wrong conclusion as to where the enemy's main blow would be delivered. Consequently, Wellington left 18,000 men at Hal, 10 miles from Waterloo, during the whole battle, and Bazaine posted his reserves on the wrong flank. At Mars-la-Tour, also, Bazaine's misconception of the whole military situation led him into the error of being afraid of the safety of his left flank, which caused him to check the French outflanking and forward movement on his right which, if it had been carried out, would have sent the exhausted Germans into headlong retreat.

An army being composed of impressionable men and horses with nerves, the effect of fire on them is a most serious fact to be considered; and we are confronted with this difficulty, that we do not know the battle effects of modern weapons. Some writers are of opinion that the battles of the future will entail greater proportionate losses than in the past. I do not think so; for, so long as human nature remains impressionable, so long will it yield before danger when that danger has been sufficiently impressed on it. The resisting power of troops is far more of a moral than a physical question; and hence disciplined troops can stand greater losses than raw troops. The only effect of improved weapons will be to produce the desire for retreat at longer ranges than in the past, the moral factors being supposed equal in each case. But I do think that, so far as peace experiments can be relied on for giving data for war experience, the artillery arm has gained more than infantry by modern improvements in weapons, in the power of producing demoralising and disorganising effects on hostile troops. In fact, the relative importance of artillery has risen largely of late years.

I will now deal briefly, but more in detail, with some of the

difficulties which arise, doubtless, in all tactical questions, but especially so in defensive questions.

1. Let us first consider the effect of artillery fire. This can be either frontal, oblique, or enfilade; but when on the defensive we are far more limited as to the choice of artillery positions and the direction of artillery fire. In fact, one of the chief difficulties that the artillery of the defence has to contend with is the want of freedom in choosing positions for the guns, the result being that the attackers, if they have even fairly good maps of the country, know a good deal more about the probable artillery positions of the defensive than the defenders will know about the probable artillery positions of the assailants. Every defensive position is more or less a well-recognised prominent feature, and if the enemy has even fairly good maps of the country, he will generally be able, as soon as contact is made, to note the position on the map being held by the defenders. One great disadvantage of the defensive is that it offers a stationary objective to hostile artillery fire, and there is always a difficulty in providing the men, horses, and material with efficient cover from this fire, which will generally be one of long duration and great concentration. The assailants' artillery have far more freedom in selecting the direction of their fire than the defenders' guns, as these latter are presumably inferior in numbers to those of the assailants, and would, in the majority of cases, have to deal with the enemy in their direct front while in action. Then, again, the penetrations of modern weapons have so seriously increased, except into earthworks, that it is every day getting more difficult to devise efficient cover; and, naturally, this cover should be as invisible as possible, on account of the increasing accuracy of modern fire. The result of this desire for invisibility of cover when opposed to modern weapons is every day causing cover to become less and less the obstacle that it formed in the days of our forefathers.

2. As regards the effect of rifle fire, this also may be frontal, oblique, or enfilade, according to circumstances. But here, again, the assailants will probably, on account of their superiority of numbers, have far greater facilities for making use of these various directions for their fire than the defenders. And the penetration of the modern bullet, especially at the close and decisive ranges, has now become a very important factor, and one by no means easy to deal with satisfactorily. And here, again, it is necessary to make use of cover that is more or less invisible, and which, therefore, is not likely to prove an obstacle to an enemy's advance. Such cover is as necessary for the horses of field officers, and of the artillery and ammunition transport wagons and carts, as it is for the men.

In dealing with both artillery and rifle fire we must be very careful to remember the demoralising and disorganising effect produced by them on the organised units of men and horses exposed to them. This combined disorganisation and demoralisation produces on *both* sides an effect which must be carefully remembered. Each side is trying to reduce the moral, mental, and material powers of the other side, and the whole question is one of relative gain and loss; and whichever side

can stand the strain best when the decisive moment arrives is the one that wins. But it must be remembered that *both sides suffer* heavily—morally, mentally, and materially; and that side only is victorious which at the decisive moment, when the appeal is made to brute force, has the greater moral and offensive spirit and energy left in it. And, consequently, the knowledge that each side is aiming at the disorganisation and demoralisation of the opposing troops must largely govern whatever steps are taken on either side to secure victory or ward off defeat.

The defensive certainly have the advantage nowadays of being better able to conceal their positions on account of the use of smokeless powder, which gives off very little visible smoke, and which, therefore, makes it harder for the assailant to detect the exact sites on which the defender's troops are posted. The artillery is not so fortunate in this respect, as the brilliant flash of each discharge can be seen in the brightest daylight.

3. In dealing with the defensive we must always bear in mind the effect that the use of defensive works produces on the men. It certainly affords them a certain amount of cover from the enemy's fire and so reduces the number of his hits. It also may be expected to increase the fire effect of the defenders, who will be under better control from their being stationary, and who will know their ranges and have an easy and ample ammunition supply. But these material advantages will, by no means, make up for the demoralising effects caused by the men being stationary for some considerable period under the falling and bursting projectiles of the enemy. These falling projectiles are not only small bullets, but also explosive shells, which will frighten as much by their noise as by the injuries they inflict. It is a well-known fact that men who have been employed much behind cover, as in siege-works, get into the habit of being afraid to advance over the open; and hence earthworks have a tendency to destroy the fighting energy of troops, unless they happen to be particularly good troops who have been well trained in the idea that cover is only the means to an end and not an end in itself, and that protection should be sought for more in the destruction of the enemy than in trying to save one's own skin. And it is probable, with the increasing penetration of modern projectiles, that the use of cover may prove morally disastrous, for men will seek the cover of trees, and walls, and buildings under the impression that they are perfectly safe; and while in apparent safety, if they suffer from the enemy's fire, there will be great danger of a panic arising, because the effect will be similar to that of a surprise, and all surprises tend to produce panics. However, we can gather one principle from this fact for future guidance, and that is, the defenders must try and demoralise the assailants before the latter get to the short ranges, so that their fire will have but little effect from its wildness.

4. The effect of the condition of the ground must be considered. As regards the effect of projectiles the condition of the surface of the ground, whether it is hard or soft, stony or otherwise, in the neighbourhood of troops, will have a serious influence on the efficacy of the

enemy's fire in either increasing or diminishing its effect, and this will be of greater importance nowadays than in the past from the generally increased use of shrapnel fire, for even where the shrapnel bullets will not injure they will undoubtedly frighten.

The effect of the surface of the ground on the working of guns is self-evident, and nothing more need be said about it. But an important point to be considered is the excavation of pits and trenches, especially on sites that are visible to the enemy. I could point out many positions in those parts of England which are most likely to suffer from the effects of invasion, should invasion ever take place, in which the excavation of even shelter trenches would be very doubtful policy indeed, unless there was a very considerable period of time available for the purpose. In some special cases which I have in my mind hard chalk is within an inch or two of the surface of the ground, and it would be almost impossible, except by heavy labour, to excavate trenches in the ground, and the trenches when excavated would form a lovely white line, indicating to the enemy most perfectly where the defending troops are posted. Of course, if time permitted, the white excavated material could be covered with sods procured from a distance; but all that is a question of time and tools, which are not always available in the presence of the enemy.

5. We must also consider the effect of the shape of the ground. As a rule, a defensive position lies along some high feature of ground, the ground in front probably falling more rapidly than the ground to the rear. Projectiles striking the front slope will have only a small area in which to effect any damage; but projectiles passing over the crest may, provided the slopes of the ground are suitable, have an extremely large area for producing destructive effects, and this is a very serious point to be considered, both with regard to artillery and infantry fire, as it may, with modern weapons, enable the assailant to cause very great losses among the reserves of the defender, especially when these latter are being brought up to the firing line. The hostile infantry fire, as the assailants approach the position, will gradually sweep the rear of the position less and less, but the bulk of the assailants' artillery can still keep up their fire on the crest and slope behind it, while their own infantry are steadily moving on.

But as regards the dispositions of infantry and artillery when on the defensive, we are confronted with a very serious defect. Naturally the artillery, which is the main arm to rely on for distant action, should have the choice of the high ground to enable it to see as far as possible in carrying out its duties. This, of course, compels any infantry which may be in front of the guns to advance and be posted some 500 or 600 yards down the slope of the position. The guns themselves will be the objects of the enemy's fire, and therefore we cannot well post the supports and reserves of the defensive infantry either among the guns or in their immediate rear. Consequently, we find that with modern weapons we shall either have to allow the guns to defend their own front, or, if we have infantry in front of the guns, the former must be supplied with ample

cover near at hand for their supports and reserves. And, if this cover is not forthcoming, they must expect to have their supports and reserves some 1,000 yards in rear of them ; or efforts must be made to support and reinforce them from one flank or other of the line of artillery.

As a rule, I presume that, as regards the relations between cavalry and infantry, the bulk of the cavalry would be conspicuous by their absence from the neighbourhood of the infantry, and that they would be watching and guarding the flanks and approaches to the position as far away as the enemy's cavalry will permit them. But I believe that, in the future, cavalry may find considerable employment in making local counter-attacks at various points along the front of the position.

In choosing defensive positions one of the most vital considerations—but one which is hardly ever adequately dealt with in any of our text-books—is the facilities offered to the defenders to carry out counter-attacks; for, undoubtedly, there is no truer military axiom than "the soul of the defence lies in taking the offensive." In defensive battles, entrenchments or cover form the shield, and counter-attacks form the sword, but the sword is always the deciding weapon. But, as to how to carry out these counter-attacks is by no means an easy problem to positively assert anything about, for *the whole use of counter-attacks may be said to depend upon the moral state of the enemy's troops against whom the counter-attack is directed.* On this point we shall speak again later. But if the shape of the ground is such that the counter-attacking troops have to pass over an open and bare and exposed crest-line, and down a steep slope in the face of distant artillery fire which can see them perfectly, I cannot conceive any better conditions for throwing cold water on the offensive spirit on which the success of the counter-attack depends.

In connection with these counter-attacks we have to consider the question of troops retiring after having been sent out to the front, for unless the counter-attack is the final and decisive one of the battle, it can only partake of the nature of a temporary sortie, the troops issuing out of position and returning again after having effected, or attempted to effect, the purpose which they had in view. And whether the troops retiring are those which have been originally thrown out as outposts, or for other advance service, or whether they form the troops of a retiring sortie, the shape of the ground over which they have to conduct their retreat must have a very serious effect on the morale of the men, especially when the enemy is near at hand.

And, as regards the question of troops being posted in advance of the main position, it is an extremely difficult question in a country of a rolling nature to decide as to how far to the front the ground should be occupied. And it requires officers of considerable strength of will and experience to decide where to stop taking up what seem to be points of advantage just to the front. This question especially crops up in dealing with advanced posts which, with the gradual progress made in range and accuracy of modern firearms, are growing more and more into disfavour, *provided that the enemy's troops are good troops and skilled in the use of their arms.* In the occupation of these advanced posts and positions there must arise the

question of opportune retirement and as to how it should be effected in the face of modern weapons; for, undoubtedly, such retirements cannot be effected without considerable loss both of men and morale, and therefore it is highly important to try and restrain the temptation of taking up and holding ground that seems favourable in front and to trust to other measures to counteract the advantage that is apparently being given over to the enemy.

Comparing the usual shape of the surface of the high ground that is generally taken up for defensive positions with the trajectories of the weapons of artillery and infantry it can often happen that the troops will be safer on the front slope of a position than on the rear slope, but with the proviso that they are hidden from view; and here, again, the difficulty often arises of our not being able to excavate trenches on the front slope of a position that will in any way cover the troops properly, or enable them to continue seeing the ground in front of them. Hills are always convex in shape towards the crest, and I think that we must in the future acknowledge that all slopes of 15° and upwards are a positive disadvantage so far as affording means of obtaining earth cover on them, or for facilitating the advance and retirement of troops in counter-attacks.

6. We have also to consider the question of the effect of existing cover that we find on the ground itself when taking up the defence. Take, for instance, woods. Of course, woods vary very greatly in their characters, both as regards the nature of the trees, the growth of the trees, the age of the trees, and the condition of the undergrowth. Some of our woods in Kent are practically impassable until a considerable amount of labour has been expended on them. Other woods can be traversed by almost all arms in any direction; and it is very doubtful at the present moment as to what the effect of artillery fire will be on troops posted in any wood. Some writers seem to think that the effect of artillery fire will be greatly increased by the splinters of wood; others seem to think that the effect of the fire will be diminished. A great deal, of course, depends upon the nature of the projectile, whether it is shrapnel, or a shell containing some high explosive; but as the enemy cannot see where the troops are posted in a wood, especially if it is of any extent, he would hardly waste his invaluable ammunition by covering the whole wood with artillery fire in the hopes of reaching some of the hostile troops in the wood, unless he knew that the wood was simply full of them. And I think it is a point open to discussion as to whether a wood that is fairly hard to pass troops through, and when time is not available to make passages through it, should be held at all, even when it occurs in a position. It will certainly draw the enemy to it, who will seek for its cover, and thus it may absorb an undue number of his forces, which will be prevented from taking any part in other portions of the battle-field; and then, if the rear and flank sides of the wood are guarded by troops posted in rear of them, a heavy artillery fire on the wood might prove very destructive to the enemy in it, and might possibly produce panics in that part of his line of battle. Of course, woods that are passable should be held, as also villages, in spite of whatever effect the

enemy's projectiles may have on them, for they will be points which the enemy will make for in order to obtain cover and to re-organise himself at a short distance from the defenders previous to assaulting—conditions which he must not be allowed to have. But these natural objects on the ground will have a very serious effect on the distribution of the troops. We cannot choose to have them or to avoid them, and so we must use them as they occur. We shall speak again of them later on; but I may say that they should be treated like the permanent forts of a permanently defended town or arsenal—that is, each must be prepared to carry out its own defence while also playing its share in the defence of the whole position.

Then, again, the presence of these natural objects on any position means that, from the difficulty of passing troops freely through them, counter-attacks cannot be made from them, and consequently we must determine clearly in every defensive position which are its offensive and its defensive parts, for only over its offensive parts can counter-attacks be made.

7. There is still another point that we have to consider with regard to taking up a defensive position, viz., the obstacles to movement that exist on its front, flanks, and rear. If there is a serious obstacle to movement in front of any part of the position it will prevent the enemy attacking on that front certainly, but it will also prevent the defenders taking the offensive there as well, and it should be thoroughly borne in mind that the defenders must always aim at taking the offensive some time or other when a fitting opportunity occurs, and if a defensive position is taken up without this intention, the battle may be taken as already decided against the defenders. Serious obstacles on the flanks are, of course, of value in assuring the morale of the defending force, and in preventing the defenders having their flanks turned, at all events by surprise. Extensive obstacles in rear of a position are always dangerous in case of a possible retreat, and the fear of a retreat being turned into an absolute rout.[1] The question of the construction of artificial obstacles is by no means an easy one. In the field all that we have to rely on in the majority of cases are ditches, wire entanglements, and bough *abattis*. The true object of an obstacle is to check and delay an advancing enemy under an effective fire. To fulfil this object the obstacle should be at some distance from the firing line, but the further off it is the greater is the labour and the more is the material required. And if the obstacle will check the enemy it will check counter-attacks on the enemy. Consequently, obstacles should only be seriously used along the fronts of the defensive portions of a defended position, so as to enable these defensive portions to be held by as few men as possible, and thus giving as many men as possible for the manning of the offensive portions and for the execution of counter-attacks. From the great labour entailed in constructing deep ditches and wire

[1]This strategical question depends very greatly on the difference of the morale of the two opposing forces, and the confidence which the General has in his own troops. An instructive example of this was the Duke of Wellington's action at the battle of Assaye.

entanglements it is probable that in the majority of cases bough *abattis* will be chiefly made use of, and if a good width of them is laid, they are by no means easily removed, even if not pegged down, and especially if they are roughly tied together in any way. Ditches or trenches dug for the purpose of forming obstacles are dangerous if they cannot be enfiladed or seen into, as they would then afford cover to the enemy, either to shoot from or to collect in, in order to reform for a fresh advance.

8. The communications leading to and from the position are of vital importance, especially those leading both to the position and to the country lying beyond its flanks, for it is by these roads that the assailant must advance to the attack of the defender's front or flanks, and if the direction of the roads in any way point out the feasibility of the enemy attempting a serious flank attack, the position should only be held conditionally, that is, it should be so held as to be ready to be given up, and thus to avoid the enemy's flank attack. But for this purpose the roads leading from the position to the rear must be so favourably situated as to admit of the rapid putting in motion of the defender's troops, and more than one position in the district should have been arranged for by the general officer commanding.

A very crucial feature in all defensive arrangements is the question of *time*. The defender wants time far more than the attacker—the defender wants time to make his preparations before the enemy's projectiles begin to arrive; the assailant is not tied by this desire, and in all defensive problems it is extremely important to deal with each one of them under different conditions of available time and strength of force, beginning with what would be done if ample time were sufficient, and then considering what would be left out as being least important as the time available becomes shorter and shorter. At least, I would propose this method for beginners, and then with the more experienced officers, who know what are the most important things to be done first, to practise them in the problems involving the shorter times first, and then giving them the problems for the increased time available afterwards.

One other point, before we conclude, that must be seriously borne in mind in taking up any defensive position, is the problem of water-supply. In fact, the question of the supply of water and food is of vital importance to all troops, whether on the offensive or defensive; but often the defensive position being on high ground is at a considerable distance from the source of water-supply, and hence arrangements should be made to enable the troops to be supplied with water and other necessaries of life at intervals during the day, for they get very thirsty in the excitement and distress under the exciting conditions of battle. Whether the battles of the future will be of longer or shorter duration than those of the past, I am not prepared to prophesy; but should they last for two days, as some writers predict, then, in addition to the supply of ordinary wants, we shall have to arrange for the actual replacement of the first-line troops during night-time, so that the battle may be continued at daylight with troops whose nervous energy has not been used up.

General J. H. DUNNE (Lieutenant of the Tower): I had not the slightest intention of joining in the discussion, but as one of the very senior generals now left on the Active List, I must express my great regret, considering how long the lecture has been advertised and that so many young and middle-aged officers are now in London, that there should be so small an audience of those who still have spurs to win in war. Nearly all those who have listened to this excellent lecture have long since ceased to hope that they will enter into the drama of future campaigns. Considering all the trouble that the Institution has lately taken in endeavouring to get together a large body of officers for the purpose of discussing these matters, I think it is a pity that no officer seems at this moment ready to get up and speak on a question which is so open to discussion as this is. Throughout the lecture Major Mayne seems always to take the point that it should thoroughly be borne in mind that defenders must always aim at taking the offensive at some time or other. Now, there are and must be many instances of Thermopylæs in the world; passes and various other places where the defenders do really gain a victory by simply holding their own. The lecturer does not seem to recognise that as enough. All through he seems to think that unless you absolutely make a counter-attack you cannot obtain what, at all events, is the result of victory. If you can hold a point for a time, the defence is a victory. I do not think the lecturer has allowed for the many occasions of simply holding a place, drawing up your forces in position in such a way that you render a successful attack impossible for a certain number of hours, as at Waterloo and other places. Of course, generally, there should be a counter-attack, but one may hold a position sometimes until dark without it being absolutely necessary to make one. There are many places where the ground in front is such that, although you may hold it for a long time, it is almost impossible to make a counter-attack. I remember some years ago at Dover holding a position near St. Radijund's Abbey, where as long as I could hold that line of defence with deep ravines in front of me it was sufficient to gain the point of the day without any counter-attack at all. But as a rule, of course, counter-attacks are necessary. I am sure we are all very much indebted to Major Mayne for his admirable lecture, and to my friend General Sir Richard Harrison for so kindly taking the chair to-day, though I am sorry there has not been a larger audience to support him.

General Sir HENRY SMYTH, K.C.M.G.: As no officer of the artillery on the active list appears to intend speaking on this occasion, I feel called on, though not having previously intended to do so, to make an incidental remark. I think the lecturer has given quite as much importance to artillery fire as we can at present claim for it, although we do not quite know what it will be in the near future; but there are two matters of procedure on which I should like to make some comment. In the early part of his lecture Major Mayne stated that both on the offensive and the defensive the artillery act from fixed positions. Now, I do not like that statement. I think that the offensive must continually adapt its artillery positions to the progress of the battle. In defensive I think the best effect is brought out, not by having your guns all displayed on a long line, but by waiting for the developments of the operations to bring up some available artillery force which, it appears to me, you must previously have in reserve. I am aware that that is contrary to the doctrines which are at present in fashion; but even if you do not have these guns actually in reserve you may nevertheless desire to be able to adapt them immediately to what is going on in the general conduct of the action. I entirely object—I was going to say hate, but that is only a personal consideration—on professional grounds, to the idea of a long fixed line of guns on a long crest of chalk-downs or a like position. The guns as a rule would, I suppose, be in positions flanking either the line itself or the particular approaches to the line; but if ever you arrive at having a long line of guns with a line of infantry in front of it, I would ask, Can you not manage it in some other way? There is something improper in it, according

to my notion. You may be driven to it, and you may have various other expedients, but I should not desire to suggest this arrangement as a thing which you must expect to see often. On the whole, I am for mobile artillery in the attack and in the defence, and for applying your artillery power to the various occasions which arise in the development of the action.

Lieut.-Colonel BAYLIS, V.D. (late 18th Middlesex V.R.): As a Volunteer officer on the Retired List, I cannot but express my grateful thanks to the lecturer for having suggested in his admirable paper the advantages and disadvantages of defence. It is a long time since I entered the Service, but I have never heard a more valuable lecture addressed, I may say, to Volunteer officers, for all Volunteer officers who are members of the Institution can come, or their friends can bring those who are not, to the lectures. Volunteer officers who read this lecture when it is published will in time of emergency derive great benefit from knowing how to act. I never remember a lecture of so short a compass in which so much intelligence is conveyed to the minds of those who may have to defend the country. I am not speaking for those of the Regular Forces, but I am speaking myself as a member of the Volunteer Force—therefore I may say "Defence, not Defiance." I assure you, Sir, that if I had now a defensive position to take up as a Volunteer officer, there are many things which would suggest themselves to my mind, having heard this lecture, which never occurred to me before. There are two or three most essential points with regard to defence. One is, that defence is only preparatory to attack. Many do not look at it in that light; they look at defence as defence and keeping their defensive position only. But the lecturer has told us that defence is not only to defend, but that afterwards you must always have in view that you have to attack—to resist your enemy and drive him from the position of attack. I hope this lecture will be read in Buluwayo. What has been said here with regard to counter-attack is most valuable for those out there. They are only soldiers of a day. As Lord Grey said they had only been soldiers for a month; yet what had they done by counter-attack? They have driven back the enemy. Many points of great and valuable interest are suggested by the lecture. One is, retreat after attack. The lecturer has alluded to that forcibly. I am exceedingly grateful, as a Volunteer officer, to Major Mayne for giving us such an extremely interesting and valuable lecture. Those who study the subject deeply will derive great benefit from it. I am sorry so few have been present, but the lecture when published will, I am sure, be of great advantage to the Army at large.

Major MAYNE, in reply, said: I have to thank General Dunne for having called attention to a weak point in the way in which I expressed my views. However, I think I can cover myself with regard to the particular expression by the passage in my lecture, "The defensive should only be considered as a preparatory attitude for a subsequent offensive movement to be made when opportunity offers a reasonable chance of success." I think that under the conditions pointed out by General Dunne the latter proviso hardly held, viz., that an opportunity was offered of a reasonable chance of success for a counter-attack being made, and yet it did not take place. Similarly in the case of small bodies closely besieged, such as at Chitral, where they were holding out as long as possible, the opportunity for a general counter-attack did not occur, and so did not take place, but a successful local counter-attack was brilliantly carried out. In the second lecture, which has already been printed, I have given a foot-note in which I have pointed out that under certain conditions of the defensive, as when the object is to gain time, a body of men may attain their object, even if they are defeated, so long as they have gained the requisite time for some other body to carry out its assigned duty. So that it does not necessarily follow that the defence must be victorious under every condition. Sir Henry Smyth has spoken against some of the views I hold. In the next lecture I am going to state my reliance on a long line of guns being able to defend its own front completely in daylight, and under the other conditions

I have laid down. With regard to guns firing from "fixed" positions, that, of course, is a relative term. If we come to think of it, in offensive battles the guns will not probably change position more than two or three times, whereas advancing infantry is always changing its position. So that, relatively speaking, I do not think I am altogether wrong in saying that guns fight from fixed positions when they are only moved two or three times probably in some hours. With regard to reserving artillery when acting on the defensive, of course, I am not speaking as a gunner, but I have always understood that one of the advantages of the defence was that you can put all your guns into action from the beginning of the fight, because it is possible to withdraw them from action and send them to any other part of the battle-field. In my next lecture I have rather relied upon long lines of guns being able to hold their own front, and for so doing I have depended a great deal upon the writings of Major E. S. May, R.A. This question of counter-attack, I think, ought to come naturally to us from our boyhood's battles. You see two boys flinging stones at one another in the street, and neither minds much, but at last one advances and punches the other's head, and the whole affair is over. I can only express my thanks for the kind way in which my lecture has been received.

The CHAIRMAN (General Sir Richard Harrison): It remains for me to say one or two words in conclusion. I was very glad to hear what Colonel Baylis said about the value of the lecture that we have just heard. I am aware that Colonel Henderson, who is a great authority, as you all know, on tactical and historical matters, and who is very sorry that he is not able to take part in the discussion, considers this lecture of Major Mayne's one of the ablest he has ever read, and one which, if taken in hand by our authorities, may work a revolution in our present system of defence. I should have liked to hear a longer discussion than we have had. It is possible, I hope it is probable, that at the next meeting, when the subject will be gone into more in detail, and perhaps more historically, there will be a good many members of this Institution who will take part in the discussion. Tactics, as you know, is a subject on which there is great difference of opinion—on the details, at any rate. Military thinkers are apt to view questions of tactics either in the light of what they have seen themselves or in the light of what they have read; and, even when starting from the same standpoint, two men seldom arrive at the same conclusion. But there is one point on which I feel sure that everyone of us will be agreed, and that is, that Major Mayne has dealt with this subject very thoughtfully and very practically. He has told us that tactics cannot be regarded in the same way, for instance, as a game of chess. In a game of chess, every piece can only go in a certain direction and for a certain distance. While in tactics we have to regard the theory of it in its relation to *living men,* which is a very important point—men whose physical and moral conditions are constantly changing. Again, I was glad that the lecturer did not too much exalt his own branch of the Service. He put it, I think, in its proper place. I was particularly pleased with one sentence in his lecture, because it was what I call so *broad.* It was this. He said, "It is the mutual self-sacrificing action of the different arms that is essential for obtaining the best results, and, consequently is one of the secrets for securing victory." To-day's lecture has been chiefly devoted, as you know, to what may be called the theory of tactics. The lecturer has gone into what Colonel Baylis calls the relative advantages of attack and defence. It is well known that all tactics are dependent, more or less, on the arms in use. We know in these modern days that the fire of artillery and also of infantry is very far-reaching, and we hardly know what effect it will have in stopping men in action. If men are to get to the "shock" we must have some way of preventing them from being annihilated on their journey. In attack there are various ways of trying to preserve men on the battle-field. One is by scattering them, another by taking advantage of ground, and another

way (which has been tried lately at Aldershot) by marching at night, or during a fog. In defence you only have two ways: you can take advantage of the ground, and you can provide some sort of temporary cover. But whatever you do, however you scatter your men, you are bound to concentrate them for the shock, the final hand-to-hand scrimmage. So you have in tactics two conditions which are antagonistic one to the other: you are obliged to scatter men while you bring them up to the fight, and you are obliged to concentrate them when you actually come to the shock. There is only, to my mind, one way of getting over the difficulties, and that is by the free and ready application of small units. It is not within our province to-day to discuss how small units shall be applied to a defensive battle-field, but I hope to be able to say a word or two on that subject at our next part of the lecture. I should like, before closing, to make a suggestion. The lectures at this Institution are very often more or less Academic, and it has always seemed to me that it would be a very great thing if the principles that are enunciated and brought home here could be in some way practically applied to our Service. In thinking over, as I have done, this lecture of Major Mayne's, there seems to me to be several practical applications that might be made, but I will not trouble you with all of them. I will just venture to give you one. If it be true that a passive defence is of itself no use, and that troops must be prepared to change a defensive attitude into an offensive one, it is obvious that all troops counted on for the defence of the British Isles (which I take it for granted includes the Volunteers) must be fully trained in all tactical movements required in time of war; and this leads me to a further deduction, viz., that tactics whether of offence or defence must be based on certain fixed principles, and the method of applying those principles must be known by all officers who have to lead men; consequently, a tactical school, where the application of these principles would be taught seems almost a necessity; and now I will not trouble you any more, except to ask you to thank Major Mayne very heartily for what he has told us so far.

# THE ANALOGY BETWEEN THE TACTICS OF FIELD ARTILLERY AND THOSE OF THE OTHER ARMS.

*A Lecture delivered at the School of Gunnery, Shoeburyness, by Major E. S. MAY, R.A., on the 10th of April,* 1896.

Colonel Stewart and Gentlemen,

PERHAPS I should, in the first place, apologise to so scientific and well-informed an audience as one expects to find at the School of Gunnery for the very elementary nature of the topics I propose to discuss with you to-day. I do not think I shall say anything that will come upon you with startling novelty, nor shall I try to attract your attention by any expression of doctrine diverging widely from what you have already been taught, either here or with your batteries. I believe myself that artillery tactics need be made neither abstruse nor mysterious, and that, in fact, they rest on just the same broad principles that guide us when we handle any arm in war. With purely technical details, such as ranging, and ammunition supply, or with questions of gunnery, I do not propose to deal. You will have heard a great deal of them here already, and they do not affect the subject of our discussion to-day. But there are matters connected with the tactics of our arm which are equally vital to efficiency as these, and which we sometimes find less clearly understood than we might at first expect. Artillery officers are nowadays most properly taught that the tactics of the other arms concern them as nearly as do their own, and that it is only when judiciously applied in combination with them that the fullest results are to be looked for from their fire, however highly from a technical standpoint the efficiency of their batteries may be developed. It will, therefore, I believe, be of assistance to any general study of tactics that we should start from a common basis; and that we should as far as possible allow the same consideration to guide us, no matter what particular weapon we happen to pick up. And we shall attain such a basis if we regard tactics as simply methods for the application of force—force, that is to say, in the widest meaning of the word, and regarded as an agency by which men are either killed, or wounded, or perhaps only frightened. It is not always necessary to slay or maim a man in order to place him *hors de combat*, the military end is attained just as well if the application of the power you wield is such that he is led to believe that such will be his fate should he not quickly either run away or surrender.

Viewed in this way we can attack with a shower of shells just on the same principle as we launch a charge of cavalry, while there is a very distinct and close analogy between the concentration of fire produced by a volley of musketry, and that inherent in a shrapnel shell. In the one case a given number of bullets are discharged in a named direction by the word of command representing the will of a commander; in the other, an equal number are sent on a similar errand also, by direction of an individual, but in this case the command takes a concrete shape and is recorded when a fuze is set.

By way of example, we will suppose that you wish at the commencement of an engagement to check the advance of your enemy's column. If you were unprovided with artillery, you would extend the comparatively few advanced troops on the spot along hedge-rows or any other favourable features of the ground, and by their fire bring about the deployment and consequent delay of the closed columns of your opponent. Your object would no doubt thus be attained for a time, but unless your force were very strong he might detach sufficient men to drive away your sharpshooters, and his main body might be able to disregard your menace and continue its progress undisturbed, in spite of your efforts.

In such a case, however, if you were provided with guns, no minor detachment would suffice to clear the path. Even if only a small portion of the road the foe were advancing along should be visible from a distance of, let us say, a mile and three-quarters, a battery commanding that portion could so effectually sweep it that no column could possibly advance until the guns were driven off. The bullets of its shrapnel would be equivalent to the fire of a considerable number of marksmen a little in front of and above the target, and would have the same effect as that of a detachment which, from a secure height above, could command the path through a defile. The distant fire of artillery is here of great value, and enables you to fight a delaying action successfully with a far fewer number of men, and with far less risk to their safety than would be the case did no guns supplement your efforts.

The same remark holds good, and the same tactics will be effectual, should a rear guard be in question; and when you have guns with you there is not the same need to leave infantry men dangerously far behind your main body in a situation from which it may not be easy for them to extricate themselves, because from a safe distance in rear guns will produce the same effect as rifles will at less secure ranges.

But guns may be utilised to supplement or replace the other arms in other situations besides these.

I dare say many people when they hear of reconnaissances undertaken for the purpose of obtaining information, have visions of light cavalry scouts, quickly moving patrols, supported perhaps by comparatively large formed bodies, with even some mounted infantry and a few machine guns thrown in.

But similar detachments to these will, if your adversary be capable, appear on his side to oppose any prying intruders from your direction, and very soon you will know no more than that the advanced troops of

your opponent are on the alert, and your explorations will come to a standstill.

In such a case you must exert a certain amount of force to rend the curtain which is drawn before your eyes. Should you send forward a body of men strong enough to brush resistance aside, it may be overwhelmed and cut off, and thus your purpose will be frustrated, and a bad moral effect will be produced on the rest of your command.

Or your advanced troops may become involved in a struggle which will be waged stubbornly until you are compelled to intervene with a reserve force, and finally the combat may deepen insensibly until all at once you may find yourself committed to an action on a larger scale altogether than what you originally intended. Again, you should here make shells do the work from a perfectly safe distance, to accomplish which you would have to thrust even squadrons so deeply into the hostile territory that their retreat might become compromised.

Moreover, a small wood or coppice, a group of farm buildings, a little hamlet, or a walled enclosure, may prove impenetrable to horsemen, and once inside it might be difficult to get men on foot out. An ordinary brickwork wall however offers no resistance whatever to the progress of a shrapnel shell, and indeed the back of such a deceptive shelter is just the most dangerous position anyone could well be in when opposed to such fire.

There is no more effectual searcher in such cases than one of these projectiles, and they will explore for you more effectually than anything else, and you will incur no risks either when adopting them.

Finally, if your foe has any guns he will probably not unlimber them until yours are brought to bear, and when you can rely on artillery you have an effectual means for discovering whether your foe has any similar support also, or not.

In advanced guard work, in retreat, or in reconnaissance, therefore, the principles which should guide you in the handling of your guns are precisely the same as those which underlie the method with which you apply the rest of your force. You substitute shells for numbers, economise your resources, and run as few risks as possible when you call in their aid to supplement the efforts of the other arms.

But let us suppose that these preliminary skirmishes are over and that two forces have brought one another finally to bay, and are extended opposite to one another's guns, grim with the resolution to fight it out.

Clearly the most cursory study of tactics will teach you that the first thing a general must do is to reconnoitre the front of his opponent, observe the dispositions of his troops, and formulate a plan of attack from the information which he thus gains.

Now, he will do this most effectively by opening fire along his front, perhaps however with only a portion of his force, and tempting the enemy's guns to reply to his cannonade. When he is aware where the hostile artillery is he already knows a good deal, and can arrange his method of attack accordingly.

And if we examine the manner of Napoleon's attack, we shall find

that he, who utilised his guns more than any general before or since, commenced his action with them in the very fashion I am pointing out. "He begins with a pretty general cannonade all along his front, and then when he has made up his mind where his blow is to fall concentrates his batteries against the selected spot," that is how Wellington once described his great rival's method, and that really is the origin of the "artillery duel" which we have heard so much of during the years of comparative peace which have succeeded the campaign of 1870. Of course, we recognise that there must be such a duel in any case, because until the fire of the defence is subdued neither your infantry nor artillery can advance to decisive ranges; but apart from this there is the other explanation of its origin.

Having then with your guns, or with some of them, threatened the enemy all along his line, and endeavoured to mislead him as to your ultimate goal, you proceed to the carrying out of the great object with which you bring artillery into the field—namely, to prepare the way for the infantry attack. But the manner of your procedure now differs from what it was earlier in the day, when, your methods being merely tentative, ammunition was carefully husbanded, fire was slow, and ranges were "distant," that is to say, more than 2,500 yards.

The batteries have now, however, all arrived; the general has, at any rate, the outline of a scheme mapped out; he has learnt something as to the enemy's position, and he wants to begin to develop his plan. Before anything can be done, however, it is necessary to subdue the hostile fire, and to do that batteries must move into nearer range.

Is it not an elementary of strategy and tactics that you must not expose portions of your force to destruction in detail, and do we not all recognise the value of suddenly throwing your whole strength, or as much of it as you can spare, on the divided forces of your foe successively? Is not that how Napoleon almost won the campaign of 1814, when, occupying a position on interior lines, by swift movement he was enabled to strike to right and left on opponents unable to unite to meet his blow? Now, the fire of guns possessed of long range in position awaiting an attack in modern times endows them with an advantage analogous to that conferred in strategy by interior lines. If the batteries of the attack straggle up into position one after the other a converging fire of overwhelming weight can be turned upon them; and, since very likely the distance of the positions they occupy has been previously gauged by the defence, a rapid fire is turned upon each of them as it appears, and they are thus exposed to the danger of being wiped out in detail. To avoid such a catastrophe, and also (a by no means minor consideration) because a bold, sudden, and simultaneous display of force carries an immense moral effect with it, whatever the arm may be which is involved, we have striven of late to teach our batteries to make their advance and subsequent appearance as far as may simultaneously. And let me add a word here to the effect that, although we are happily no longer wedded to pedantries of drill, there are certain points to which great attention must always be paid, and which we must never despise. And one of these is

the matter of intervals. Close attention to intervals is necessary even in manœuvre, and it is impossible for batteries to make a simultaneous appearance, or rather open fire simultaneously, if the first guns to arrive are allowed to absorb all the room. Last year, even at Okehampton, it occurred that when on one occasion three batteries tried to get into position one was absolutely crowded out, and could not get into action at all! Conceive the state of things that would have supervened had those batteries been under the fire of a capable opponent waiting, and prepared for them! Imagine the confusion; the guns being run to one side, or even limbered up over again; the vexation, the delay, the complete upheaval of all the ranging process already in course of progress in some batteries, and picture to yourselves what would happen were all this taking place under a shower of shrapnel bullets! A brigade division thus coming into touch with an enemy will feel a loss of prestige and confidence such as it would be difficult to recover from for weeks and months.

And in war it might be a question not of three batteries finding room, but of nine or ten or twelve having to do so.

The distance to which batteries should advance must be left very greatly to circumstances. In a rolling country, such as that where the manœuvres took place in 1893, the move would have usually to be from one crest line on to the next; but we should strive to get into position for the second time somewhere short of 1,500 yards from the enemy's position.

We have now to consider how best the fire of the batteries may be directed after they have found the range. It is more or less an innovation in our Service to allow a man to attempt to direct the fire of more than one battery in action. The Great Duke held that artillery was necessarily a "service of detachments," and so it may have been, and indeed was, when a battery's range was so short that it could only fire at an objective which stood immediately opposite to it. But the history of tactics teaches us that, no matter with what arms battle is joined, the surest road to victory lies in demonstrating all along the hostile line, and then concentrating an overwhelming force on successive portions of it. And the principle should guide our action where guns are concerned, as surely as it exerts its influence where bodies of troops, or even ships, are involved. On paper it does not seem feasible to allow hostile guns to play upon us absolutely undisturbed; nor could one entirely neglect them, were they making excellent practice; but the records of war somehow belie the anticipations of peace-time, and it will probably be possible to concentrate the fire of three batteries on one of your opponent's in future war as much as it was for the Germans to do so in 1870. Moreover, it would not be necessary to do more than concentrate fire in the way I have mentioned for more than brief intervals. Modern shrapnel, if the range be at all correctly found, will very soon assert its power, and I believe these successive concentrations will occur like sudden squalls, or *rafales*, as Langlois calls them, in the monotony of the general cannonade. Indeed, the same French authority has likened such swift outbursts to the attacks of squadrons, and has spoken of them as "charges" of

shells. So far, therefore, we are able to recognise in the employment of artillery very much the same principles which guide a general, or any man of sound military instinct, in handling the rest of his force in action.

He reconnoitres with a portion of it in front of his main body, he utilises the retaining and delaying power of his guns in advanced or rear guard affairs; then having found his foe drawn up to receive him, he feels and explores the whole of his front until he has formed his plans, then attacks decisively, and concentrates his energies on successive portions of the hostile line, just as Nelson endeavoured to destroy portions of the enemy's fleet in detail, or Napoleon strove for the same results on land.

But during the progress of so much of the fight as we have now considered, eventualities may arise which may open up opportunities for, or the movements of the foe may necessitate, the display of more enterprise and activity than is implied in the vision of a long line of guns pounding away in a dogged and more or less lethargic fashion.

That is not how all battles have been fought out. A competent leader with well-trained batteries at his command may utilise them to strike a telling blow, to make or repel a flank attack, just as a force of infantry or cavalry might at an auspicious moment suddenly be thrown into the *mêlée*.

At the battle of Bautzen, for example, Napoleon sent Ney to turn the allied right flank, and seize the village of Preititz in rear of their position. Blücher met this movement by detaching twenty guns, which attacking Ney's columns in flank forced him to give up the prize which he had succeeded in capturing, swerve from the direction Napoleon had with a true instinct indicated to him, and take up ground from whence he could reply to Blücher's counter-attack. The allies were beaten at Bautzen in the end, it is true, but they were not by any means routed; and, had Ney been able to persist in his advance there is little doubt but that their fate might have been annihilation.

At Salamanca, when Pakenham's division fell on Thomière's flank, and struck the decisive blow of the day, it was the fire of the twelve guns which accompanied it that largely contributed to the French discomfiture.

It was likewise the flank attack of two guns at the Alma on the Russian centre from a point almost inside their very position which produced an immediate effect. Longstreet, too, at Manassas struck into the fight with twelve guns in a manner which was also most effectual; and, indeed, examples might be multiplied to weariness to show the same results.

But, it may be asked, can these things be done again, and under the fire of modern rifles and artillery will it ever be possible to shift guns from one part of the fight to another?

Well, we shall know more on this point after we have seen an European war; but Hoffbauer tells us that it was possible for the German batteries to limber up and move under fire even to a flank during the battles on the Moselle, and I believe that certainly at ranges not less than 1,800 yards they will usually be able to do so again, that is to say if the configuration

of the ground helps them at all, and that we may see an enterprising leader utilising the mobility of his guns on future battle-fields just as the great masters turned it to account in bygone times.

Because, we must remember, that although the power of firearms has increased so immensely of late, the argument founded on their deadliness cuts both ways; and we may fairly expect that the infantrymen will be so much absorbed in shooting at one another that they may well be taken a little by surprise if a favourably placed battery suddenly limbers up and withdraws. It has been found that the teams need not be exposed for more than about a minute and a quarter during this operation, and at a range of 1,800 yards, or even considerably less, it would not be very easy for infantry to do much harm in that time, unless they were prepared for what was going to happen, and knew where to look for it. Of course, however, if opposing batteries had accurately found the range, to thus expose teams would be extremely rash, to say the least of it. But on such occasions the attempt would not be made until the hostile fire had been got under.

The records of the battle-field have, however, over and over again given the lie to theories based on deductions culled in peace-time, either from manœuvres or practice ground; and, therefore, we need not be deterred by gloomy anticipations from the determination to attempt to avail ourselves in the next war of all the mobility which is a distinguishing characteristic of modern Field Artillery.

The work in which the guns, in the account which I have given, have up to now been engaged in, has chiefly been, you will have noted, the subduing, as far as possible, of the enemy's artillery fire, with a view to our infantry being able to advance to the attack. That may be said to be their primary duty, and the whole character of the fight will be influenced by the manner in which it is performed. It is, therefore, to be regretted that at manœuvres we never, or rarely, see anything like proper time allowed for this preparation to take place, nor is any enquiry made, so far as I know, as to what has been the result of what is mainly an artillery duel.

If I may be allowed a momentary digression, I would observe that it would greatly tend towards realism if more attention were paid to this point at manœuvres, and either the result of this artillery duel decided by umpires with the batteries, according to the circumstances and incidents which they observe; or, if that be impossible, and it would often not be easy to make a decision which could confidently be said to reflect results reached under the conditions of actual war, by simply drawing lots, or tossing up, or by a purely arbitrary decision on the part of the chief umpire.

It would be instructive and interesting to see what would happen, if a general, having planned his attack in a certain way, were informed that the hostile guns had gained a complete mastery over those supporting him.

Would he stick to his scheme and advance in the teeth of a more or less uncrippled artillery playing on him? Or would the other side, having

been sent the same message, leap forward and assail him in a bold and swift counter-attack? It would, I say, be well worth the delay, and possible chance of a field-day, spoilt, perhaps, as far as the education of the men and leaders of minor units were concerned, to see how the senior generals would modify their plans under such circumstances.

But, just now, we must go on with the attack, and so we will suppose that our artillery are not absolutely flattened, and that word has been sent to it, or that its leader has seen, that the infantry are about to start on their decisive advance, we will suppose that circumstances during the previous cannonade have helped the general to select a spot where he hopes he may drive home his blow, and that the guns have been told where that spot is.

Now, it is a principle in war that you cannot be too strong at the decisive point; and, therefore, an artillery drill-book only reflects the teaching of an infantry one when it says that the fire of the guns is to be turned upon that point, even though the enemy's guns may still be capable of mischief. Our batteries must risk their own safety, and forget to protect themselves, when their comrades go forward, and must then only consider how they may most surely help them in their task.

And they may do so with greater safety than might at first sight appear, because it is a well-established rule, not only in war, but in, I think, all the relations of life too—and it is likewise simply but one more manifestation of a very human instinct—that the arm at the moment the most dangerous is the one to be assailed. In other words, in a *mêlée*, you strike at the opponent who is hurting you, or threatening to hurt you, most; you pay your most pressing creditor first; and you answer an official letter before a private one.

For this reason our own infantry pressing forward to the assault must be checked, or they will carry all before them, and, therefore, the enemy's guns will be more absorbed with them as a target than they will with you.

It becomes a question now as to whether the guns of the attack should make yet another advance in close support of the infantry. Supposing you are already in action, within between 1,500 and 2,000 yards of an enemy's position, and, that you can keep up your fire till the very last, I cannot imagine that you will greatly better the effect of your guns by going forward. The shrapnel shell is so destructive at such ranges as I have indicated, that, so far as killing goes, you might afford to rest content. But there is the closest analogy between an artillery attack carried out by shells, and an infantry assault depending on the bayonet: and if you understand how to carry out the latter, you will appreciate how to find success in the former.

When Napoleon marched a great heavy column upon his opponents, what usually happened? The great mass came on with all the glow of coming triumph upon it. Its resistless, unhesitating strides carried conviction of defeat to the minds of those awaiting its onset. Who could withstand such majesty, such a remorseless, unwavering pressure as it seemed to carry with it? The prestige, and pomp, and circumstance surrounding such a charge were enough in themselves to win a victory,

rarely or never did the defence, already shaken and demoralised by artillery fire, wait to cross bayonets with that brilliant assault—it broke and fled, practically beaten by moral effect alone.

If the column wavered, and stopped, as at Waterloo, it lost its chance. The defenders recovered their nerve, plied it with fire with all the advantages of ground and formation in their favour, and then the attack checked in the flowing tide of conquest, disappointed and surprised, very likely crumbled and gave way.

The great concentration of shells on the point to be assaulted produces its effect much in the same way as did those human projectiles of the great Corsican. The intensity and volume of the fire should grow as the infantry creep nearer, there should be no breaks in its progress, and there should be no cessation just in the last few minutes when the infantry is about to make its final rush, or the defenders may have time to recover themselves, and the little space of breathing time allowed them may just make the difference between defeat or victory. The artillery fire should in fact culminate in a tremendous blast, more powerful than anything yet experienced, just as the supreme moment, when the infantry are thinking more of their bayonets than of their cartridges, arrives.

Now, to keep up such a continuous stream of fire as I have pictured to you, may on average ground often be impossible, unless the guns can push in as the infantry presses on. To fire over men's heads is a ticklish job, and an accident or two may produce a very bad effect. Moreover, unless the configuration of the ground be almost ideally well suited to the operation, it will almost always happen that the final advances of the infantry will mask the fire of the guns. For two good reasons, therefore, the guns may have to go forward, and there is a third which is, perhaps, the most cogent of all, and will appeal to everyone, because it applies to all arms.

What I mean is that immense moral effect will be imparted, and an impetus given to a wavering attack, if guns go ahead and make their voices heard well to the front.

We are taught, therefore, that if for any of these reasons an attempt to go forward is demanded from us, the certain destruction, at any rate to our horses, which will apparently await us, is not to deter our batteries from the attempt.

In the event of a success which was not of so overwhelming a character that the foe was absolutely routed, and dispersed in a demoralised flight, it would further be necessary to send guns forward to the position just evacuated by the foe, so as to ward off any attempt to make a counter-attack, which, after the first panic was over, he might feel himself sufficiently re-organised to contemplate.

In the excitement of the last moments of an assault, however, it would not, I think, be possible to hold the infantry battalions charging forward so completely in hand that they might not spread out over the captured position in a manner which might leave little space for the supporting batteries to come up. Moreover, if the foe were at all capable of rally-

ing, the loss inflicted on the teams of the accompanying batteries might be heavier than would justify the sacrifice involved.

It is for this reason that the French have thought of a manœuvre which it is hoped will be equally effective, and which may be carried out at a less exorbitant cost. They propose to send horse artillery batteries forward on the flank of the infantry assault at the same moment as it is launched, and since their advance will be timed for a moment when the hostile musketry will be somewhat subdued, and when the energies of the enemy will be devoted to the defeat of the infantry, it is hoped that celerity of movement will enable them to get into action without serious losses. Fire from a flank is also far more effective than any other, and in this respect, therefore, the French scheme seems also an advantageous one.

As we have thus accompanied the guns of an attack right up into the enemy's stronghold, and having, I think, found that the same broad principles, as guide us in handling troops in general, influence their employment, I may mention a few facts about the defence which are of interest.

To a large extent, the rules which guide us are corollaries in an opposite direction from any hints I have already given. That is to say, that, when the foe is using his guns to reconnoitre your position, it is well not to show him all your hand, if you can avoid it. Guns well placed are not easy to see until they commence to fire, and, therefore, an effort should be made on the defensive to reply with as few guns as possible to his first attack at long range. At the same time, however, we must remember that a defensive attitude usually implies inferiority, and that we want to delay the enemy's attack as long as possible. If only we can sufficiently do so, the hours of daylight left when it is finally developed may not suffice to carry it through to its conclusion.

As regards the places most suitable for guns they should naturally be placed where they can best sweep the approaches along which the hostile columns must advance, and the protection of your flanks would likewise, I think, fall to the arm which is most capable of fire effect.

It is the advantage of the attack alike, whether guns or men are for the moment in our thoughts, that a concentration against any point of the defensive line may be arranged for. When on the defensive with guns as with rifles you must be prepared all along your front, and must therefore distribute your forces more equally along it, and cannot aim at massing them as you would were you the assailant. On the other hand, the batteries which await attack should be able to fall on their opponents in detail, as they come up.

When discussing the advantages of attack and defence with reference to tactics in general we attribute, and rightly, a great moral value to the former. In the case of guns the moral factor has less influence, I think, than where men only are concerned; and another principle, applicable to both infantry and artillery, affects them when in attack more seriously perhaps than it does their brethren. We are taught that both guns and riflemen must make cover subordinate to efficiency. The consideration

is to be fire effect—not your own vulnerability. It is for this reason that batteries coming into action often present a tempting target. The command of a gun is only about 3 feet, and from a point so near the ground as that a very slight inequality will hide considerable stretches in front of you which will be unswept by fire unless you push guns further down the slope than often appears judicious to lookers on. The guns of the defence can be better covered and can make use of gun pits, and moreover can be provided beforehand with the ranges of the places which will most probably be occupied by the hostile batteries.

Undoubtedly, if theoretical argument is paid attention to, the advantage must lie with the defence; but there is this to be said about all prognostications in this respect whether they apply to guns or infantry, namely, that during periods of peace opinion has always tended to appreciate the power of the defensive, and yet in war, whatever may have been the weapons fought with, where tactics were, in spite of many brilliant examples to the contrary which our Army has given, at all equally balanced, it is the attack which has most often carried the day.

Again, there occasionally may occur a moment during the progress of an action, when the artillery on the defensive are forced to realise that, do what they will, they cannot cope with the guns of the attack, and that, if they continue the contest, they will infallibly be destroyed altogether. Now, in a parallel case where infantry were concerned, what would be done? They might be withdrawn and kept under cover only to emerge when the assault was upon them, and then devote the whole of their refreshed energies to pouring in such a fire as may check their foes.

The Turks acted in this way at Plevna; during the cannonade which heralded the approach of the Russians, they cowered beneath their parapets; these were but little injured, as is the case usually when earthworks are played upon by guns, and the enormous preponderance of artillery which the Russians could boast of—they had some four hundred guns against sixty—did but small destruction either to men or entrenchments. When the near approach of the infantry masked the fire of the artillery, the Turks left their secure hiding places and lined the parapets with rows of rifles, but little the worse either in number or in morale for the furious storm which had raged harmlessly over their heads. The preparation of the Russian assault had, in point of fact, failed in its object, and their attacks were consequently repulsed.

Now, the same tactics may be adopted in the case of Field Artillery also. I do not however think that it would be necessary to withdraw the guns themselves usually. We are told to do so in the drill-book, I know, but those instructions have, I think, more particular reference to occasions when a regular refit may be required. The guns will be hardly injured at all by shrapnel bullets, and the moral effect on the adjacent troops of removing them might be bad. I think, therefore, it will often be enough merely to take the detachments away, and make them lie down under cover until the enemy's infantry move forward.

When that moment arrives the guns must fire on that infantry, even if every man with them is destroyed in the attempt. But even a very much

superior artillery will find it a protracted and not very easy task to annihilate the whole of a detachment before considerable damage has been done by it. For short periods of time and at decisive ranges four men can work a gun very well—even three can do it at a pinch—and you need not, therefore, expose all your men to destruction at the same time, but they can be called from under cover as casualties occur.

Here perhaps I should note that it is only under these circumstances that there is any analogy as regards reserves between artillery, infantry, and cavalry tactics. Speaking generally, there is indeed a very striking difference in this respect between them, because modern artillerymen are taught that they are not to hold any part of their force in reserve at all. Every gun we have is put into the fight from the very first moment that it is possible to do so; the reason being that their long range enables them to be usefully employed from the very beginning, and that you should try and establish a superiority in fire as early in the day as possible, so as to be able to bring your infantry forward.

There remains only one other aspect of artillery tactics to be considered, wherein of late the principles of its employment have been made closely approximate to those of the other arms.

It is perhaps the most elementary principle of warfare that scouts and patrols should be sent ahead and to the flanks of main bodies to secure them against surprise, and to bring them back information about the enemy.

In addition to these patrols, cavalry send ground scouts ahead of their squadrons to examine the ground over which it is intended to move, and to signal any pitfalls or difficulties which may menace rapid progress.

Now, batteries have just as much need for such information as have cavalry or foot-soldiers. It is even more essential to them that they should know where they may safely penetrate, because the consequences of a wagon or gun being bogged or upset are more serious than when a similar disaster overtakes a rider.

Further, it is a certainty that no one will look after your safety so well as you are likely to do yourself, and for batteries to depend on outside assistance only for what they may do to a large extent for themselves is a mistake.

With a Horse Artillery battery there would usually be no difficulty in finding a few men for these duties. With field batteries it is not so easy to spare men from the guns, but there are some spare horses almost always available; and young non-commissioned officers, the shoeing smiths, the farrier, and the second trumpeter can be pressed into the service. It is of course not to be hoped that such men will make ideal scouts, but neither is it in human nature for a cavalry colonel to send his best men away from his squadrons—so that with careful training a battery relying on the eyesight and intelligence of men not originally enlisted for such duties as more legitimately fall to cavalrymen may find its security perfectly well provided for in the way I have described.

General Tyler, who has tried the plan in practice camps in India, is even strongly in favour of a system by which their scouting duties

should be pushed to the fullest extent, and by which men should be sent ahead to report on positions for guns, and the facilities or difficulties which may exist in an approach to them. The ground scouting he considers may be left to the Nos. 1, and section officers, while what are called in our drill book "Combat Patrols," a somewhat ambitious title, would be occupied in duties which more strictly speaking belong to reconnaissance work, as far at least as might be consistent with a close and unremitting attention to observation of, and look out for, the enemy.

Such scouts were ordered at his experiments not to proceed more than a mile from the batteries in any direction in an open, and not more than half-a-mile in a close, country, and were always to preserve touch with them.

They were to keep their eyes and wits about them, and note everything relating to the enemy as regards the disposition of his troops, particularly with regard to woods, villages, hills, or rivers. I should say that these should form their principal duties on service, but at a practice they were told to devote their attention most especially towards obtaining information as to how batteries might best advance in a given direction, whether cultivated or rough ground must be passed over or not, and as to where they would find the best positions from which to carry out the tasks assigned to them.

These scouts were further instructed to make a sketch of the ground, marking the N. point, showing all necessary details, and accompanied by notes supplementing the pencil work. On home service the difficulty would be to get the time and men, but there is no doubt that to train men in this way, if opportunity offered, would be an immense benefit all round, both to the men themselves, and to the batteries whom they serve, in so far that it would greatly develop their powers of observation and intelligence. Commanding officers would get information from men who thoroughly appreciated and were in sympathy with the special needs and characteristics of the arm whose interests they were looking after, while the men themselves would be none the less efficient as gunners or artificers, because their intelligence and powers of observation had been developed by training such as General Tyler has described. And when finally battle was joined and many batteries were together in position, the habits they had acquired and the practice they had had would no doubt render them especially valuable as messengers, and links of communication between the various units that go to compose and keep in full work a mass of guns.

And, in conclusion, let me indicate one final and culminating phase in the action when the same principles once again govern the application of all three arms. Perhaps when some of you hear or read of the pursuit being launched after a beaten foe, and of the necessity there is for pitilessly harassing the vanquished until retreat may become converted into rout, and defeat develop into demoralisation and disaster, I dare say some of you have visions in your mind of squadrons hotly pressing on, of furious pursuit with the bayonet, and

of the *arme blanche* once more asserting its old supremacy. Doubtless such sights will be seen on the battle-fields of the future, but there may be, and I believe should be, another element in the inundation. Shells pursue more swiftly and relentlessly than even the very fleetest cavalry, and artillery fire should play its part in the demoralisation of the flying enemy in quite as marked a degree as do either horse or foot.

All the guns that can possibly be moved should be hurried to the ground evacuated by the foe, and a fierce and continuous rain of projectiles be poured on his retreat by every battery that can be brought to bear.

The great range of modern guns will enable the swift shells to follow and overtake the most reckless runaways in their most headlong flight. The roads which lead from the position may often be swept for hundreds of yards along their length by these same persistent, remorseless, inevitable destroyers. Whole miles of wagons and guns may have to be abandoned under their all-powerful influence, and the huddled crowds of fugitives have to disperse and seek shelter in the fields on either side. Guns can pursue therefore by means of their fire, just as the other arms do by a greater exertion of the sinews and muscles of man or beast, and we merely substitute one agency for another when we employ all the arms on the same principle to attain the same end.

I hardly think the subject of pursuit by means of fire has hitherto received all the attention it should have met with at the hands of military writers in this country.

I commend it to your notice now, and I hope I fitly bring my lecture to an end when I leave horse, foot, and artillery co-operating, and striving together to shatter and irretrievably ruin an opponent whose defeat has been compassed by their loyal combination during the previous hours of a hard-fought fight.

# DISCUSSION ON THE NAVAL PRIZE ESSAYS, 1896.

SUBJECT OF ESSAYS:

"In View of the Changes which have taken place in the "Composition of Fleets during the Present Century, what "System of Entry, Training, and Distribution is best cal- "culated to ensure an Efficient Body of Officers and Men "of all Branches, for a Peace and War Establishment?"

ESSAYS FOR DISCUSSION:

*First Prize Essay by Commander J. HONNER, R.N.*
(April Number of Journal.)

*Second Prize Essay by Captain S. EARDLEY-WILMOT, R.N.*
(April Number of Journal.)

*Essay (honourably mentioned) by Captain J. M. ROSE, R.M.A.*
(May Number of Journal.)

Friday, May 1st, 1896.

The Right Hon. The EARL OF HOPETOUN, G.C.M.G., in the Chair.

Admiral Sir GEORGE ELLIOT, K.C.B.: The object of this meeting is to discuss certain proposals for manning the fleet, as defined in the Prize Essays published in the JOURNAL of this Institution. There can only be one opinion as to the great merit of these essays from the point of view of instructive information, for in that respect nothing is wanting for our guidance, and it is only left to us to express an opinion on the conclusions arrived at according to our lights. I find it quite impossible to deal with all the questions treated of in the essays; and I, therefore, confine myself to one only—the efficiency of the Royal Naval Reserve and "a further Reserve for the Navy." In fact, even on that one question I find that these essays are so voluminous, that it is very difficult to condense one's opinion within a small compass. I noticed with regret that Commander Honner prefaced his scheme by limiting himself to proposals which, he says, would have the least chance of becoming of practical effect, thus yielding to the verdict of political economy. Of course, it is a question of money, but that is not a matter for Naval experts, unless the country was in a bankrupt state, instead of in a state of plethora of wealth and paying off debt. We have, therefore, not got Commander Honner's very best ideas; we have not got a scheme before us founded on real efficiency, but one based on limited expenditure—a policy which I think Naval exponents should be very loth to encourage. What I also notice is that his plan does not provide for the growing strength of our fleet, for it has no elasticity, inasmuch as the one-third of the *personnel* of our peace requirements would only afford a limited fixed number of short-service men, and any large increase of that number would, as the writer says, be repugnant to Naval officers, and, in his own opinion, rightly so. Besides, we should have to wait for years for the first batch of these Reserves, and much may happen during that time. Another point is that these short-service men in joining the Reserve would not, if they entered the mercantile marine, be all of them at home on the outbreak of war, nor

would their discipline be improved by their association with that Service; in fact, they could not be relied upon. If the principle of short service should be entertained at all as a means of creating a Reserve, it should be supplementary to, and not apart from, the present peace establishments, so as to avoid their deterioration; therefore a better system would be to embark a portion of our Reserves on board each ship for short service, in addition to their complements. The whole question, in fact, is a matter of money; unless we are prepared to pay the price for training, we cannot have an efficient Reserve. I may say at once that I see grave objections to short service of any kind, and that under any system of Reserves some re-adjustment of the crews of ships in commission will be unavoidable in the event of war. The right policy to be pursued, in my opinion, is to endeavour to the utmost to perfect our Reserves by careful selection and adequate training of a class of men of nautical proclivities who could be mobilised with certainty in a few hours when wanted, and in such numbers as to man the fleets and then to leave a sufficient residue to fill up losses. No other scheme is commensurate with national security. The state of our mercantile marine is not only a disgrace, but a danger to this country, and we must all agree with what Captain Eardley-Wilmot says on that behalf; but the reforms he suggests would take time to develop, and as a political measure would be more contentious even than that of increased estimates. The question of our reliance on the mercantile marine for manning the Navy requires to be considered from a totally different point of view to that which has hitherto been maintained. To my mind, steam motive power has added greatly to the capacity for *self-defence* of the greater number of our traders, and every encouragement should be given and facilities afforded in that direction, for with a couple of Q.F. guns and a few trained men to fight them a small number of these steamers sailing in concert even without convoy would render it a matter of self-interest with privateers to avoid an encounter, and even an enemy's cruisers might feel it questionable whether such captures were worth the sacrifice of a few lives. We are taking 10,000 men of the pick of that marine to man our fleet, and we subsidise some of the fastest of their steamers as "vidette," ships for our fleet to the detriment of the commercial vocation of that service and of our food supply. Is that wise? I think not. I would go on the other tack, and subsidise the best of our steamers in the direction of self-protection, if armed and manned by British seamen only. The subject would require an article of its own, and I only refer to it as bearing on the question of our Reserves. The old East India Company has taught us a useful lesson in that respect, and so are the Russians doing now, and I believe that the knowledge that our merchant service was thus prepared would damp the ardour of privateering, and to some extent the cupidity of foreign nations. I entirely concur with Captain Wilmot's commendation of our second-class Reservists and with all the changes he proposes in order to improve their condition and increase their numbers, their deficiency in these respects having been entirely owing to stinted expenditure, which, in fact, is the only real difficulty which stands in the way of efficiently manning the fleet. What I notice as most remarkable in these essays is the entire absence of recognition of the available means of supplementing our other Reserves by developing the Volunteer movement for Naval purposes. I feel confident that if encouragement were held out, many corps of Naval Volunteer officers and men might be enrolled within a twelvemonth, fulfilling whatever conditions the Admiralty think necessary to impose, and proving as efficient for Naval purposes as the Army Volunteers are for that service. The permanent staff of these corps would be retired Naval officers, the junior officers selected for their nautical proclivities, and forced to pass an examination in order to obtain their commissions as sub-lieutenants or lieutenants. They would not reach the higher rank. The men could be of the same class as those now enrolled as our second-class Reservists, with a sprinkling of mechanics from our ship-building firms, a most valuable addition in these days when war-ships are masses of

complicated machinery. Instead of one month's gunnery instruction, these men, like our Army Volunteers, would have constant training on shore and on ship board if vessels were provided. That, perhaps, is the main question of all. It was the cause of the breaking up of the Volunteers eight years ago, because the Admiralty would not supply them with vessels in which to train. If half-a-dozen of our small corvettes were employed for that service, I believe these Volunteers would very soon prove themselves efficient; they would have the same *esprit de corps* as the Army Volunteers, and better auspices as regards discipline under the influence of their officers than our second-class Reservists, who have no officers in constant touch with them. Their training would be more continuous, and more general. The expense of this corps would naturally be greater than that of our Army Volunteers on account of the sea-going training they might require, but which must be afforded to all classes of Naval Reservists in vessels appropriate to that purpose if they are to be efficient. The qualification of the rank and file of these Naval Volunteers in point of physique, and standing, and intelligence, would I believe bear comparison with any other mode of enlistment, and their number could readily and rapidly be increased as the service would be popular, for those who were so recklessly disbanded five years ago consented to accept service with the fleet in war-time, without reservation of time or space, which disposed of the objection raised that they would not serve abroad. It may be said that the officers would not be efficient; but the staff of senior officers would be fixtures, and there are numbers of young men of means and education in our sea-port towns with nautical aspirations who would qualify, if not as watchkeepers, yet for the other duties on men-of-war, and at any rate beggars must not be too exclusive. I contend that as lieutenants, or sub-lieutenants, these Volunteer officers would in many respects prove a greater acquisition than the ordinary run of those in the mercantile marine, and the late proposal to employ Marine officers to perform some of the duties of lieutenants justifies the belief that there is plenty of material out of which to form Volunteer officers equally competent under the same system of training. If other nations are now placed more on an equality with Great Britain owing to the reduced value of seamanship as an element of Naval superiority, yet the British race has not lost its cunning, and those other qualities which have hitherto contributed to the success of our arms by land and sea; and these Volunteers would stand to their guns and know how to fight them as stoutly as they did in days of yore, and it must be borne in mind that each gun now is a battery in itself, requiring an officer in command. I believe the Naval Service would be as popular with Volunteers as the Army, and the state of our Reservists condemns such a policy as that of stifling the patriotic feelings and nautical aspirations of our countrymen, and thus setting a bad example at home and to our colonies by disparaging Naval Volunteering as an element of Imperial defence. I am dead against short service, and against making the Royal Navy a nursery for the mercantile marine. Unquestionably, that service requires to be reconstituted in the sense of being naturalised, and thus restored to its proper vocation as an arm of Imperial defence, instead of as at present a nursery for foreign Navies. Its present condition may be called politic, but to my mind it is reckless improvidence, and at any rate Naval officers should never lend themselves to the proposal of any sacrifice of what constitutes the highest efficiency of the Royal Naval Service. They should stand shoulder to shoulder in defence of their interests as combatants who risk their lives in defence of their country, and expose all negligence as a crime. We are told that Naval officers are irresponsible and know-nothings, because they cannot make black appear white, or perceive how three may make four. Irresponsible forsooth, when their lives are at stake, and because they see no fun in allowing themselves to be handicapped to their own destruction without protest, and in order to bolster

up popular budgets. The truth is, they are very much responsible to themselves if they conceal glaring facts to their own injury, and also to their countrymen for withholding from them any danger they foresee. Their responsibility is a lasting one, whereas the responsibility of a Government dies with them. On the vital question of the adequate strength of our Navy are Naval officers to remain silent, when they hear it said in high places that our Naval supremacy is so assured that the Navy Estimates can be reduced next year, and when they know that reckoning the so-called coast-defence ships of foreign nations, which are battle-ships in disguise, we are ten battle-ships short of a bare equality, of that fighting power which in the event of war we should have to contend against? These remarks most deeply concern the plans presented to us for manning the fleet, seeing that the short-service system falls far short of future demands, and is therefore incompatible with our needs. It would almost look as if there were grounds for believing that the growth of foreign Armies had reached its climax, whereas to all appearance the rivalry for sea-power is likely to continue until the crisis comes which will decide the fate of our Empire; and where, it may be asked, can the responsibility then be attached, should we be found wanting? I am quite aware that I have touched upon some very delicate subjects, but nevertheless, they are very important in their bearing on manning the Navy. I may be accused of causing discontent, but I consider that that is an ingenious plea which should be dismissed as irrelevant, for the origin of discontent is a sense of concealment. I deprecate appeals to public opinion for personal grievances, and think that all claims of that nature for redress should be passed through the appointed channels. But the defensive power of our Navy is a matter which concerns every citizen, without regard to grade or occupation. What has led to the formation of the Naval League is, that professional opinion is no longer represented in Parliament as in good times of yore, but is now concealed by politicians for political ends. If the organ of publicity of that association is untruthful, let the Government expose its untruth; but if that is not done, then silence gives consent, and the public is not left in ignorance as to the true state of the Navy, which, according to the evidence afforded by that journal, is still dangerously deficient, both as regards ships and men, in what constitutes that sea-power said to be essential to the safety of our Empire. When everything points to the necessity for largely increased expenditure as the only means of restoring our Naval supremacy, is it surprising that Naval officers should bestir themselves on national grounds when they hear reduced estimates complacently talked of for next year? I am extremely grateful for the patient hearing you have accorded me.

Major C. G. BRITTAN, R.M.L.I: I am afraid I can only speak on a small matter in this question of national importance, viz., my own Corps, as referred to in the first and second prize essays. We have already discussed these essays at Plymouth, and I will endeavour to put before you the opinions which I heard expressed on the points raised in them, in connection with the training and efficiency of the R.M. Corps. Both the first and second prize essays state that officers R.M. are given little authority or responsibility on board ship. The suggestion is made that they do not receive any authority or responsibility, because they are not much used for naval work. When the officers go on board ship they come under a fresh system entirely. Up to that time they have been accustomed to deal with their own men, to deal with one another, and to deal with the materials placed in their hands; but on embarking they find themselves not authorised by right to do anything, they cannot deal with their own men for any of the offences they may commit, they cannot sit as members of courts-martial on their own men, and when they are landed with a naval brigade they are not eligible by right to take command, should their seniority, according to relative rank, place them in the position of Senior Officer. It is suggested that the officers should know what they are going to do on board ship; that it should all

be clear and defined between themselves and their superiors and between themselves and their subordinates. It is thought that the system which would give most efficiency would be one in which they should deal with their own men by right (with a proviso to meet the case of an incompetent officer); that they should be eligible to sit on courts-martial on their own men; and that, when they are serving in combined operations on shore with a Naval brigade, and they happen, by casualties or otherwise, to be the senior in relative rank, they should be able by right to take their position as such. The effect which the consciousness of *responsibility* has on the training of the individual is very clearly pointed out in the following extracts from "The Tactics of the Future," by Lieut.-Colonel W. A. H. Hare, R.E., which appeared in the May number of this JOURNAL:—"*Responsibility.*—The latter makes a man reflect, offers him an inducement to work, raises his professional tone and sense of duty, gives him an object to strive for and obtain, and turns him, in fact, into a man of action, provided he is of intrinsic value, integrity, and fidelity. On the other hand, we generally see men of weak character shrink from responsibility of any kind; instead, indeed, of arousing in them any signs of determination, it seems to have rather the opposite effect." . . . . . "The feeling of *duty* and consciousness of responsibility are again chiefly together the means of arousing our intellectual faculties, and really honest work only begins with a sense of responsibility. Responsibility makes us reflect. Sound reasoning, however, is perhaps the greatest task that can be imposed on human nature, especially if it is to be of a lasting kind. It is devoid of enervating effects; it is invigorating. It appeals to the brain which governs the nervous system, and triumphs even in cases when it has to deal with physical weakness. Responsibility again leads to that inward reproach of shame which is such a powerful lever in overcoming the hesitating moments of the weak." . . . . In two places it has been suggested that the young officers should start their career by learning nautical work, I mean by that, navigation and the allied subjects; and it is also suggested that they should be taken away when they are about 19, and sent to sea for a year before they have completed their discipline on shore. It is felt that the result of that education would only be that the country would get a third-rate "Seaman" officer or a very undisciplined "Marine" officer. The system recommended is that the recruit officers should go straight away to sea for two years after completing their drills at headquarters; that the officers generally should be eligible to go in for the same classes of instruction as the Seaman officer in all the weapons that are to be found in the fleet, and that they should be able to take out the same certificates and receive the same qualification that a Seaman officer can at the present moment. The question of the amalgamation of the two branches of the Royal Marines—the Royal Marine Artillery and the Royal Marine Light Infantry—is referred to. This is considered very desirable, and it is hoped that any system which may exist in the future will amalgamate the two branches of the Corps, and will cause the Light Infantry to be trained on the same lines as the Royal Marine Artillery, both officers and men. The Gold Medallist speaks of the increased complements in harbour ships. I take it he means by that the largely increased numbers in the Naval depôts of our three big ports, and he points out the loss of sea experience. That is no doubt true. He does not mention another point—that, through a large number of men being employed in the home ports in the Fleet and Dockyard Reserves there is a great loss of training to the Corps generally. The Corps cannot keep up the supply of trained men for the fleet. Of course there is an easy remedy for that, viz., to increase the strength of the Corps, which is being done gradually. But at the present moment that is the great difficulty. It is very much desired that the Royal Marines should be drawn more closely to the Navy in every way, and it is considered that any system for drawing them closer must, to start with, give their officers a defined position on board ship. It certainly would seem advisable that a large Corps, like the Royal Marines, nearly 16,000 men strong, should have a

direct representative on the Board of Admiralty, an officer who has passed through the ranks of the Corps, and would understand its sentiments and its traditions. It should be practicable for officers to obtain the same qualifications in all the weapons that are found in the fleet as the Seaman officer can. Under such a system of training there can be no doubt that the grand old disciplinary spirit of the Corps would thrive, and its efficiency would be greatly increased.

CHARLES M. JOHNSON, R.N. (Chief Inspector of Machinery), Retired: Not being a member of this Institution, I consider it an honour to be permitted, as an outsider, to give some of my views with regard to these very interesting essays. I will take them in the order in which they stand, the order of merit. Beginning with that of Commander Honner, I would say, first of all, that I shall confine my remarks entirely to the subjects which interest or affect my own branch of the Navy. I agree generally with the remarks of the essayist in the first paragraph, under the heading of "Engine-Room Artificers," more especially in the estimate which he has formed of the importance and general abilities of these valuable chief petty officers, and I most cordially endorse his words when he says: "The men who assist to drive the Atlantic liners have a light task compared to the work which falls to the Naval E.R. artificers. On these grounds it is essential that the numbers of this rating required for the fleet should be kept up to the full amount." As to whether the Admiralty estimate of what should be the full amount is adequate to the real interests of the country or not, I shall speak later on. I pass on now to the second paragraph under this heading, where I am obliged distinctly to dissent from the author. He is altogether in error when supposing that the men of the mercantile marine known as "greasers" could in any way be considered as fit and proper material of which to form a Reserve of E.R. artificers. What is a "greaser"? He is a man who is not a mechanic, but simply an engine tender. From prolonged experience of one particular class of work, he has acquired considerable efficiency, it may be, in running the machinery of the great Atlantic liners without heated bearings: that is all! He has nothing to do with the manipulation of the engines, except under the immediate orders of the engineer. He is never a responsible watch-keeper. His duties are analogous to those of our leading stokers; and, as a Reserve of that class of petty officers, the "greasers" of the merchant service would be a valuable addition. The duties of the E.R. artificers are not confined solely to the manipulation of the engines, nor to watch-keeping: these, in fact, are the duties which, as a rule, occupy the smaller portion of their life afloat; the greater part of their time is employed in "mending their nets after fishing"—*i.e.*, in making good defects, adjusting bearings, and generally overhauling and examining the machinery. For it must be remembered that even now, with all the pressure which the Admiralty put upon admirals and captains to keep at sea, more time is spent in harbour than at sea; and, at such times, when work requiring high mechanical skill and ability is in hand, of what use would the "greaser" be? Could or would the chief engineer set him to adjust a connecting rod, or re-braze a steam pipe, or pitch a boiler, or line up a link motion? Not if he had any regard for his machinery. In making this proposal for the employment of "greasers" as E.R. artificers it is evident that the author is dealing with a subject with which he is imperfectly acquainted. It is probably news to him that many E.R. artificers hold Board of Trade certificates as engineers; and that many more could obtain them if they chose to submit themselves for examination. No! the equivalent of the Naval E.R. artificers in the mercantile marine is not the "greaser." I pass now to the second clause of this part of the essay, "*b.* Stokers," and I will briefly remark, that while I concur in the belief that men of the R.N.R. would make tolerably good stokers for the Navy—although it must not be lost sight of how different are the conditions under which steam, at anything like "full power," is maintained in the Navy, as compared with merchant ships and liners—it is by no means certain that any large number

of these men would be available in the event of war. Is it so certain, as some would have us believe, that, on the outbreak of war, all or most of our merchant steamers would be laid up in port? If such were the case, how about our food supply? and why is provision made for armed cruisers to protect our merchant shipping? We must at all costs keep open our communications with those neutral ports from whence our food stuffs may be procured; otherwise this country would be starved into submission in a very short time. That there would be many small steamers laid up at such a time may be possible; but their crews will be required to fill up losses in the larger ships, caused by the discharge of foreigners and others. I do not think we should count on any assistance from the merchant service in time of war, as far as regards engineers or stokers. Time will not permit me to follow the author through his ingenious tables, showing how the R.N.R is to be built up. I have already said that we cannot count upon any large amount of help coming from the merchant service, and therefore it is superfluous to run a tilt at a man of straw. Tables of this kind show a vast amount of ingenuity, but are rarely of any practical value. It is so easy to make men on paper, but very different to obtain them in flesh and blood. I pass on now to where the author deals with the Engineer officers. He does not tell us from what source his table of the estimated numbers required is obtained; and time has not permitted me to go through the list of ships in the Navy and those building to ascertain its adequacy or otherwise. I presume, however, that it has been drawn up by taking the list of ships and Mobilisation Form No. 1, and putting the two together, the estimate has been arrived at. As I propose to deal, later on, with the question of adequacy of E.R. complements, as provided for in Mobilisation Form No. 1, I will here only remark that I totally dissent from the author's suggestion that, to supply part of the deficiency of 237 Engineer officers, the third-year students should be reckoned upon. The "Exigencies of the Service"—that fatal, facile phrase, used to cover a multitude of administrative sins—have already caused the absorption into the Navy of some dozens of embryo and immature engineers of the fourth-year students. This error should not be repeated. Still less should the lower step be contemplated of descending to the third-year men! On the contrary, the original period of six years' training should be resumed immediately, and adhered to in the future. It is unreasonable to expect these young fellows to master their profession in a shorter time than six years. If they learned only to be expert workmen, it would take at least five years for them to acquire the requisite facility of manipulation with the tools; but when to this has to be added a curriculum of technical education, which is of equal importance, is it too much to insist that adequate time shall be given for both purposes? But three years! What can the engineer student know of his profession in that time? The author evidently has no great faith in his own proposition, as he says that "at a pinch they might assist in performing duties falling to assistant engineers." Assistant to an assistant engineer! Away with it! Are we going to play at engineering—the nation's first line of defence? I am glad to be able to find another small point of agreement with the author. He says: "To get competent men from the trade (*i.e.*, the outside firms) a much higher remuneration than that now offered will have to be given. It is not in the interests of the country or the service that they should be brought into competition with the market rate of pay . . . . . Considering the very important duties that fall to Naval Engineer officers, there can be no question that the true policy for the country to follow, and the cheapest in the end, is to train her own Engineer officers, and not to look outside for any help." That is undoubtedly the policy which the Admiralty should adopt; but seeing that, according to the author's own showing, the present deficiency amounts to 237 officers, and recognising the long period which must elapse before the present source can be brought up even to present—not to speak of future—needs, it behoves the Admiralty to grapple immediately with the question, and to solve it without reference to any other con-

sideration than that of the country's needs. Keyham College cannot supply us for years to come with the number of Engineer officers we require; therefore, the outside profession must supply our needs for the time being. Before offering any suggestions in place of the proposals I have taken objection to in the First Prize Essay, I should like, briefly, to consider one or two points in the Second and Third Essays; and I thoroughly agree with Captain Wilmot's suggestion, that "it would bring this branch [*i.e.*, the engineering] more in harmony with the others if it were recruited much in the same way, and entered the Service through the same channel [*i.e.*, as the executive officers]." But, I would alter or amend that proposal by suggesting that they should all be entered on exactly the same footing, and without any decision as to which branch of the Navy the successful candidates were to join; leaving the selection entirely to subsequent examinations, and the observation and reports of their instructors, who should have little or no difficulty in deciding for which branch of the Service a cadet is best suited. In the American Navy, cadets of both lines—Naval and Engineering—enter West Point together; but I am not able to say whether they enter with the distinctive titles, or whether that point is settled subsequently in the manner I have suggested. But that question is of less importance than the primary one of a common training college, on entry, with which I heartily agree. Referring to the training of the engine-room staff, there are many remarks of Captain Wilmot's which I endorse. I will only refer, therefore, to one or two in which we are not altogether in agreement. In speaking of the training necessary for the second-class stoker, he says: "For the duties of fireman, or stoker, we now enter young men direct, but they should go through a regular course of training before being drafted to sea-going ships. This should include stoking in torpedo-boats and destroyers, as well as larger vessels." Training for second-class stokers is a necessity which the Admiralty has not yet recognised. No provision is made for regular training. Men are entered from the plough-tail and the farm-yard; from our cities and our fishing grounds; from the labourer's hod and the cab-stand, and pitchforked into the stokeholes of our men-of-war without any training whatever in engine-room or stokehole work.[1] It seems to be thought that firing a boiler is a thing which comes naturally to every son of Adam who finds himself in front of a furnace with a shovel in his hand. It is a fallacy! My experience is, that a man may be twenty years in a stokehole and yet be unable to fire scientifically, or even efficiently. All Naval engineers will tell you of the failures they have met with. But while all stokers do not become proficient in the course of years of actual practice, it would be absurd to jump to the opposite conclusion, that training cannot help the raw recruit. It will be seen that thus far I am in agreement with the writer, but I take exception to the latter sentence of the paragraph, viz., that this training should include torpedo-boats and destroyers. One doesn't expect a child to run before it can walk; and training in torpedo-boats and destroyers may well be postponed until the second-class stoker has been rated first-class and has done a commission at sea. Again, Captain Wilmot says: "Owing to improvements made in the pay and prospects of this branch, the class of stokers entered has improved, and no difficulty is found in getting the numbers required." That is not my experience, at any rate, and I have only just quitted one of our principal ports where the entry of stokers is carried on. Not only do candidates not present themselves in sufficient numbers, but more than half of those now entered would have been rejected had former standards been adhered to. The present standard of height is 5 feet 4 inches, and chest measurement 34 inches.[2] A few years ago these were respectively 5 feet 5 inches, and 34½ inches. Now, considering that the work of a stoker is the most exhausting which falls to the lot of a man-of-war's man, does it not appear somewhat extraordinary,

[1] On the official recruiting posters it is stated in large type: "No previous experience necessary."

[2] Up to February last the standard of height was 5 feet 3 inches.

not to say ludicrous, that the standards of physique for these men should be so low? Very few of those who are now listening to me can have any conception of what is involved in hauling out the fire from a furnace 6½ feet to 7½ feet from mouth to bridge, and from 3 feet to 3½ feet across the bars! If the fire has been properly burned down before drawing, there will still be from 8 to 10 cubic feet of glowing clinker and ashes to be hauled out; and this, be it remembered, up an inclined plane to the furnace mouth, which may be 3 feet 6 inches from the stoke-hole plates. The physical power required to be exerted to do this work must be seen to be appreciated. Can we expect young fellows of 5 feet 3 inches in height to be able to do such giant's work? We do not want tall men, but the minimum standard should be 5 feet 5 inches. It is undoubtedly true that some of these weedy youths develop marvellously during the three months' disciplinary training which they undergo at the depôts—due generally to the excellent food, the moderate exercise, the fresh air, and the temperate life they are obliged to lead; but why the training should begin and end with their depôt work, and why they should be drafted to sea-going ships as part complement, without any training in that which is to be their life's work, is, I confess a matter which I have never been able to understand. Compare the years of training which the blue-jackets go through. And of what use is all this magnificent training and drill on deck if, when all your guns are disabled, and your last torpedo is fired, you cannot run away, because your stokers do not know how to keep steam? Of what use is it to build ships capable of beating all other ships in the world in speed, if at the critical moment when you want the final effort exerted your engine-room complement fails you, because you have not trained them? Surely, it is but the wisest economy that, when spending your millions on your ships and engines, you should spend your tens of thousands in training that staff on which you must ultimately depend for giving you the weather-gauge of your enemy! With regard to the E.R. artificers, Captain Wilmot finds fault with the fact that these men enter the Service as chief petty officers, and he advocates their entry on a lower grade. It is sufficiently difficult even now to get thoroughly qualified candidates; and I have no hesitation in saying that any proposal to diminish their rank on entry would be the most effectual barrier the Admiralty could raise before intending candidates. Warrant rank for E.R. artificers is a concession which must be granted in the near future. It will then enable us to retain the services of highly skilled and experienced men whom we now lose in the very prime of life. The difficulty as to cabin accommodation referred to need not be considered. There are many Engineer officers ranking with lieutenants who have no cabins. The E.R. artificers would, no doubt, agitate for cabins as soon as Warrant rank is conceded; and, as far as it is possible, cabins should be given them; but there is a limit in all ships to the space available for cabin accommodation, and that must regulate the supply. It would be a mistake to give these men commissions, even if many of them were found to be men who, "in the manipulation of the engines, were equal to all the duties of chief engineer"; for the fact is that the principal duties of the chief engineer do not consist in the manipulation of his engines, however smart and expert he may be. The chief engineer seldom touches the engines in the way of manipulation, except it may be on first commissioning, when it is possible he may find himself surrounded with a staff, few, if any, of whom have seen the machinery under weigh—still less who have actually handled it. I extremely regret that the Third Essay has been so short a time in my hands. It is one deserving of the most careful consideration, quite beyond the possibility of crowding into a few hours with that of the other two Prize Essays. I can only glance at one or two points. The author, speaking of the best way of making the Service more attractive in the E.R. Department, so as to ensure a sufficiency of stokers offering themselves, says: "The best way to achieve this is by making the work less arduous; but until the numbers are increased this

economical solution cannot be obtained, therefore such suggested improvements in pay and positions as the chance of Warrant rank and the additional 2d. a day on re-engaging must be tried to enable the work to be made lighter and more interesting." It is undoubtedly the fact that the reduction of E.R. complements which took place in 1892 resulted, and still results, in more hours of labour being enforced on the members of the E.R. staff than on those of any other branch of the Service. This and the withholding of the extra 2d. a day which was some years ago conceded to all other branches of the Naval Service (I am not sure whether the Marines get it) on re-engaging, are two of the principal grievances of the stoker element. The first will take some time to remedy; the latter may be done immediately. And that very small and just concession would act as a charm in two ways: first, by inducing men who now claim their discharge at the end of their first term of ten or twelve years to re-engage for the second period, and, second, by affording an additional inducement to men to join. Turning to the Engineer officers and the author's remarks on their entry and training, it is especially gratifying to me to find an officer in the Service outside my own corps, not merely willing to concede, but actually advocating, executive rank for the Engineer officers. Having been the father of that proposal nearly thirty years ago, I most heartily endorse it here. The proposal to endeavour to induce firemen and engineers R.N.R. to serve for short periods in men-of-war is a good one, well worthy of adoption, until by increasing the number on the actual strength of the Navy the E.R. Department shall be equivalent to its requirements. Having thus most superficially and cursorily criticised these three extremely interesting essays, as far as they deal with the E.R. staff, I will endeavour as briefly and concisely as possible to point out what, in my estimation, are the most urgent reforms necessary to ensure efficient service in the E.R. Department of the Navy. These are three in number, viz., 1. Training; 2. Increase of numbers; 3. Increased authority. It has already been pointed out, both in the essays under discussion and in my remarks on them, that there is no training in stokehole duties for second-class stokers on entering into the Service; that the only training they have consists of duties connected with discipline, gunnery, musketry, boat pulling, squad drill, physical drill, etc., etc. All these are very necessary for the young recruit, and the first three or even six months in the Service could not be more profitably employed than in such exercises and discipline. But, if these be so important, can we consider training in the work which is to be the principal employment during his service life, of secondary, nay even less, of *no*, importance to the country and the Service? Why do we train our blue-jackets so extensively? (Their whole life in the Service is really one long-continued training.) Is it not that we may, if possible, render our men superior to those of any other Navy, so that in time of war the heaviest battalions may not always have the victory? It has been said—I cannot vouch for the accuracy of the statement—that it takes five years' training, at a cost of £300, to make an efficient seaman. The cost of training a second-class stoker is difficult to estimate, but at present it consists chiefly in things not, or at best imperfectly, done; in the gradual but almost imperceptible deterioration of machinery, and the diminution of up-keep generally throughout the department. Our young Engineer officers are almost as badly off. They have a certain amount of training, it is true, but it is of a most restricted nature, and is confined to a few days during the last year of their time in the dockyard. The E.R. artificers have no training whatever; not even the disciplinary course through which the stoker recruits are put. Some of them, however, keep watch, or tend machinery in motion, until they get into the Reserves, where they may have some opportunities of attending trials; or are sent out for a short course of training in torpedo-boats. To make the E.R. staff thoroughly efficient, it is necessary that a regular system of training in sea-going ships of modern design should be inaugurated without delay; and the British Navy will not attain its highest condition of fighting efficiency until such a system has been inaugurated,

and been in full working order for some years. With present complements, it is as much as the staff can do to run a normal-draught trial of four hours' duration without assistance from the deck, and by detaching all hands from other duties. Everything must be dropped when the quarterly trial becomes due; or an order is received from the commander-in-chief to proceed with all dispatch. Every engineer, artificer, and stoker is then required to drive the main engines; and not unfrequently it is found necessary to put them into two watches instead of three. What is required is to place the Navy in such a position that we can not only propel ships at almost their utmost speed, but fight the guns and work torpedoes also. In most cases it will be found that an increase of the E.R. staff is required to the extent of 25 to 40 per cent. In other words, about one-third of the present number should be added to the *personnel* of the engineering branch to supply the ships already in commission. At present, the chief engineers of our ships have no command over their own staff, except that of issuing orders; they have no power to enforce those orders but through the executive officers. That is to say, in the event of any disobedience or neglect of orders, or the commission of any offence by any member of the E.R. staff, the chief engineer cannot award any punishment; nor can he reward any act of merit, except through the commanding officer. This naturally deprives him in a very great measure of that respect and deference which follow or attend the possession of disciplinary power and authority. But this is by no means the worst feature of the present status of the Engineer officers of the Navy. Being civilians, or on the list of civil officers, the Engineer officer, no matter how high his rank, is subject to the orders and control of the most junior officer of the executive branch, who may for the time being be the officer in command. It will be answered that all officers of the civil branch are in a similar position. Theoretically, this is true; but, practically, it is not so; and for this reason, that Engineer officers are borne in ships, from which other officers of the civil branch are, by the very nature of the Service, excluded. This is especially the case in ships in Reserve, where it not unfrequently happens that a Warrant officer—either gunner or boatswain—may be the only executive officer borne. How easily friction may arise between the superior civil officer and the subordinate military officer, requires no very great stretch of imagination to conceive. That such cases do arise, it is hardly necessary to state. That they should be impossible is equally self-evident. The remedy is, to make all Engineer officers executive or military officers.

Captain ARTHUR W. MOORE, R.N., C.M.G. (H.M.S. "Britannia"): It is obvious time will not permit of my touching on the many interesting points in these essays. I wish however to offer a few remarks on the all-important question of the entry and training of executive officers. Both essayists advocate later entry. Commander Honner would take young men from school at eighteen, and there is rather a formidable list of subjects which he would expect them to bring up for their examination. I do not see any mention of navigation, but I suppose that comes in under the head of "Seamanship, etc." Captain Eardley-Wilmot would increase the age of entry, and is in favour of open competition. Now, I know there are many officers, and no doubt many here present, who would view with great distrust any departure from the old-established custom of entering executive officers young, but I would like to point out the altered condition in the life of the midshipman in the sea-going ship at the present time to what it was thirty or forty years ago. Cadets then went to sea at fourteen, became midshipmen of the watch first on the quarter-deck, then on the forecastle, when the officer of the watch trusted to them to look after the head-gear, the foretop-gallant-mast, and so on. They were then allowed to take charge of the watch at times, and at the end of five-and-a-half years' sea-service midshipmen came up for their examination for lieutenant with a real, sound knowledge of seamanship, and had also learned thorough navigation and some mathematics. What are the conditions now? Cadets go to sea at sixteen on the

average, and serve for three-and-a-half years as midshipmen; but what are they doing? Their forenoons are generally devoted to school: the study of elementary pure mathematics chiefly, and some navigation; in the afternoon they have instruction in gunnery, torpedo, seamanship, and other subjects. As midshipmen of the watch, after school hours, what have they to do? The officer of the watch is on the bridge with one helmsman at the steam wheel, and all the midshipman has to do is to go occasionally round the ship. The only hours he has an opportunity of learning seamanship are during the forenoon and afternoon when there are tactical evolutions and drills. In one ship he is sent on deck when there are evolutions, but in another ship you find that he is never allowed to be away from school. If these are the conditions, if this scholastic work is to go on, it is impossible for a midshipman to receive that training as a seaman and as an officer which has been the custom in the past. I think there can be no doubt the Naval officer of the present day does require a higher mathematical knowledge than formerly; but what many officers object to is the constant teaching of elementary pure mathematics at sea, to the detriment of professional training. It surely cannot be right, and if you look at the results of examinations you will find there is not much progress made. I would not suggest any very drastic change, and cannot go with Commander Honner in his suggestions for so late an entry; but there is a great deal in Captain Wilmot's paper which I do agree with. I think if we were to send midshipmen to sea slightly older, with a solid ground-work in mathematics, they would become effective in a shorter period. I think it is far better to have a shorter time as midshipmen, and to take up responsible duties in the ship earlier than they do now. As far as competition goes, it is rather a delicate subject. I have no doubt there is a great deal to be said for and against both systems. But without committing myself to any opinion on either, I think it perhaps is not well to unduly limit the area of selection. I am very sorry there is any diversity of opinion on the necessity for utilising a training squadron. I know what I owed to the training under my first captain in a ship that was always under canvas, and I do hope and trust our young officers will have the advantage of being trained in a squadron or ship under canvas, to follow after the training in the "Britannia." There are many who say it is a thing of the past; and I suppose those people are perfectly satisfied that our coal supply is practically inexhaustible. But whether it is a thing of the past or not, there is something in that training which does make the man, and I hope it will always form part of the training of our young officers and seamen.

Lord Hopetoun having to leave, the chair was taken by Admiral Sir John D. Hay, Bart., K.C.B.

Staff-Engineer R. W. EDWARDS, R.N.: Mr. Johnson has already said so much with regard to the branch of the Service to which I belong, that I think very little is left for me to say. I should like to make one or two remarks about some points not touched upon by previous speakers. The whole of the essayists draw attention to the fact of the insufficient number of candidates for the engineering branch of the Navy. I would like to point out what, in my opinion and in the opinion of many other persons, leads to the small number of the candidates. I happen to be at the present time in the North of England at a large engineering establishment, superintending the construction of the machinery of my ship—the "Powerful"—and I come across down there any number of young engineers who have gone through a course of training with the Naval Construction and Armaments Company who would make most excellent naval engineer officers. Yesterday I met the father of an engineer officer who had joined the Navy from this company, and he told me that he did not consider the position of a naval engineer officer was good enough, considering the cost his youngster's training had put him to. He said, "I spent £400 or £500 on my boy's education, and I find now that I have to keep him going in the Service." That clearly points

to the fact that the young fellows, whom we would like to get into the Service, and who get their training in outside firms, do not consider the Navy good enough on the present terms of pay. There is another point which prevents them entering, and that is the peculiar position of the naval engineer, who appears to them to be in the Service, but not of it. There is nothing whatever in his official designation to show that he is a Naval officer or that he belongs to the Navy. When people outside a dockyard, port, or ship of war talk about a naval engineer, the ordinary idea in their minds is that he is something like a penny steamboat man, or the driver of a locomotive on the railway. They do not recognise that he belongs to the Navy at all, and it is not until people get to know him that they begin to find out what he is. Youngsters outside note these things, they see how the position of naval engineers is not understood, and they do not think it is good enough to join a Service in which they get no defined position, for they think they can do better on shore. I am talking of the direct-entry men, the men who get their training outside in civilian establishments. Of course, you can get any amount of youngsters at the age of fourteen to sixteen to enter the Engineer College at Keyham; there is never any dearth of youngsters at that age for any profession. Boys have not cost their parents so much to educate, and parents are glad to place their sons in any profession which is at all decent or respectable. With regard to the remedy, I go entirely with Captain Rose; I think his essay hits off what I and many naval engineers consider should be the position of the engineer branch in the Navy. It should be made a regular branch of the Service, a distinct arm, and its members should be made to feel they are part and parcel of the Service. There is now no feeling of any social inferiority on the part of the engineer officers in the Navy itself. I have been for over twenty years in the Service, and I must say as far as my experience in the Navy itself goes, that my ward-room messmates have been all I expected them to be. There has never been any question whatever of any difference of treatment or any idea that one kind of officer is inferior to another. My brother-officers there are all gentlemen, and that is all that need be said. But the point I wish to make is that the position of a naval engineer is not understood outside the Navy, and I think if it were improved on the lines suggested by Captain Rose that you would get at once a very steady flow of candidates for the engineer branch. I am quite convinced of that. Mr. Johnson has stated that an engineer officer has no executive authority in his own department. We now have over 18,000 stokers and nearly 2,000 engine-room artificers, so that roughly, including the engineer officers as well, the engineering branch numbers about 22,000. In the old days, when the engineer complement of a ship was very small, you had your men under perfect control. You simply went below, down one ladder, and found all your department in front of you, under your eye; now your men are all over the ship; your complement, instead of being numbered by tens and twenties, is numbered by hundreds. In my own ship there are, roughly, 300 in the engineer branch. The engineer officer has control over all these men in his own department. It would be a great help to this officer in keeping up the discipline of the department if his men felt that he had the power of punishing them for minor offences, and of enforcing his orders. Time is very often wasted now, and if a man offends it is often highly inconvenient to take him on deck and report him. The man has to be sent away to shift into a clean rig before he can go on the quarter-deck, and much time to the department is wasted, and so you are very often tempted to look over the offence, or to take it out of the man yourself in some other way. When you have some work on hand that may not be agreeable you may give it to him to do by way of punishment, but it is not a regular or a legal way, and the man has then a right to complain if he wishes to do so. I think the position of the engineer officer should be improved in this respect, and that he ought to command the men in his own corps. I do not mean that the engineer officer should be able to command anybody outside his own corps; that would be absurd, and no

engineer officer has ever thought of it; he simply wants to be an executive officer in his own department, and to have the style and title of an executive offier so as to indicate his position, not only to people on board ship, but to people outside who may know he is a Naval officer, but do not know his rank. People do not know who you are, or what you are. You cannot go about and say, "I am staff engineer, ranking with a major in the Army, or a lieutenant in the Navy," you cannot have that placarded on your back. A great many people feel that engineer officers should be given a proper designation to show they belong to the Navy, and have some real connection with the Navy. There is one point no one has touched upon, and that is the Reserve of engine-room artificers. It strikes me there is good material for forming a Reserve of engine-room artificers in the fitters and boiler makers and engineering workmen generally in our dockyards. I have never heard the idea mentioned before, but it seems to me we have a fine field there for forming a good Reserve. Dockyard engineer workmen are the very class you want to get in the Reserve; they are always employed in the repairing of engines of war-ships, they are good for all naval engineer purposes, and if once brought accustomed to naval discipline, they would be as useful as the engine-room artificers we now have in the Navy are. I think it is well worth the attention of everybody to try and form a Naval Reserve out of the dockyard workmen. They are fitted for it by training, and they certainly would be a much better class of men to get in as Reserve men than the greasers (suggested by Commander Honner) from the mercantile marine. Mr. Johnson has said nearly all I intended to say. I might add that I am a little surprised to find in essays which deal with the changes that have occurred in the composition of our war-fleets, which changes have been brought about entirely by the introduction of steam, that so very little has been said about the engineer branch of the Navy; but possibly the writers of the two prize essays not having a professional knowledge, or not having a very close knowledge of the subject, very wisely avoided saying too much about it. I think Captain Rose has hit off what I consider should be the ultimate position of the engineer corps in the new Navy.

Vice-Admiral BOWDEN-SMITH: We are met together this afternoon to discuss the Naval Prize Essay, and also the interesting paper which has been contributed by my friend, Captain Eardley-Wilmot. I will confine myself entirely to those papers, and only consider two or three subjects mentioned in them, as our time is so limited. One of the most important suggestions in Commander Honner's paper is the proposal to create a Reserve to take the place of our Royal Naval Reserve forces, and I think his proposition as to having our ships in future manned by two-thirds long-service men and one-third five-years' men, the five-years' men afterwards to be drafted into the second and third-class Reserve, is worthy of consideration. The question is, Are the numbers that he quotes as necessary sufficient for our requirements, and could we expect that most of these five-years' men would continue in the sea service after they pass through our ships? Again, could we ensure the ships of our mercantile marine employing them, or could they be induced to do so on the consideration that a certain number of ships of each company so employing them are placed on the Admiralty subsidised list, or that the companies themselves were in receipt of Government postal contracts? We must remember that it would be unwise if our steamers carried too large a proportion of Reserve men. They should certainly not have more than one-third, or one-half at the outside, because, as it has been pointed out by one of the speakers, if on the outbreak of a war we took many men out of these ships, or took the vessels themselves off their important trade routes we should be distressing the country just at the very time when we want everything to go on as usual. However, Captain Eardley-Wilmot in his essay notes that during a war our sailing-ships and many of our slow steamers would be laid up, so that some of the men at present serving in them would be available to fill up the places in the larger ships. I will not take up

any more time upon this subject, but will pass on to what appears to me one of the burning questions of the Navy, and that is the position of the lieutenants' list. We have been very short of lieutenants of late years, there is no question about that, and there is also a difficulty as to suitable occupation for the senior lieutenants who cannot be promoted. I do not think there is anything to complain of as regards the retirement of lieutenants. If you compare a lieutenant's future with the professions on shore, such as the Bar and the Church, I think the retirement is a very fairly good one, but we want some further outlet on the active list for those lieutenants who after ten years' service see no reasonable prospect of promotion before they retire. Of course, it would be very easy to increase the lieutenants' list to any extent by continuing to enter more and more cadets, but we should only be accentuating our difficulty at the other end, unless we provided some additional outlet for lieutenants of ten years' standing. In order, therefore, to increase the lieutenants' list in an economical way, and at the same time to provide some outlet for lieutenants of over ten years' standing who cannot get their promotion, I am inclined to think Commander Honner's proposal of abolishing the accountant branch altogether and relegating their duties to the executive officers is well worthy of consideration. In small ships the paymaster's duties would be undertaken by a lieutenant or sub-lieutenant (for a consideration, of course), in addition to his own duties. In the larger ships we should have lieutenants of ten years' standing, specially qualified who engage to do the work, and who as accountant officers would be excused all other duties except in cases of emergency. Of course, a lieutenant who accepted the position would receive considerably higher pay than other lieutenants, but would renounce all claim to promotion on the active list, though he should certainly have additional rank on retiring, if not relative rank before, and lieutenants who accepted that position might reasonably be retained on the active list till a later age, perhaps till the age of fifty. It must be remembered that in our very small ships at present the accountant's work is done by a lieutenant or sub-lieutenant. Recently, when I was in Australia, there were two or three little ships under my command, where the accountant work was done in this way by an executive officer, and I never heard any complaint that the accounts were improperly kept, or that the men were not properly victualled and clothed. We must also remember at all our Marine Divisions where there is a large number of officers and men, the men are clothed and paid without a special accountant officer being considered necessary, and, I understand, the work is well done. Some of our ships are at present very under-officered as regards executive officers. Take the case of the third-class cruisers, which have a captain and three lieutenants only, and no other executive commissioned officers. I remember quite well that on one occasion when one of them was on a distant part of the station in Australia, and engaged on important work, I received intelligence that the captain and two of the lieutenants were on the sick list, leaving only one officer fit for duty. I could not give them any assistance because that ship was hundreds of miles away. But if that little vessel, instead of having a paymaster, had borne a fourth executive officer, a lieutenant or sub-lieutenant, one of them doing the accountant officer's work in addition to his own, I think she would have been very much more efficient. I will quote one other case which came under my notice quite recently. Five assistant-clerks were sent out to Australia for distribution in the squadron to learn their work. They were all additional to the complements, and I think I am right in saying that the captain of every ship to which these boys were sent wrote and asked me if they could not be removed to some other ship, on the plea that they were of no use, and occupied valuable space. Surely if we are going to retain the accountants' branch we might dispense with entering these boys. We might engage young men between eighteen and twenty, and after two years' service as clerks they could be promoted to assistant paymasters, and we should thus save the space occupied by them, and their still

more terrible sea chests, bearing in mind that every additional chest takes away room from the rest of the ship's company. If this proposal of abolishing the accountant branch were carried out, I think we might eventually add some 300 executive officers to the Navy without increasing our burden; and, as we should at the same time provide an additional outlet for the senior lieutenants, we should lessen the promotion difficulty. Of course, the present accountant officers would continue their duties until they retired in the usual way, when their places would be filled by executive officers. Some years ago when we abolished the navigating class we transferred some 300 officers from one list, where they never expected any promotion, on to the lieutenants' list, where they expected to take their chance with the rest, and we increased our difficulty as to finding a future for the lieutenants; but by taking the step I propose, we should not increase, but lessen, our promotion difficulty. I am very glad to notice that both officers, whose essays we are considering, not only advocate the retention, but also the augmenting, of the Marines, and I entirely concur with Commander Honner when he says, "the Navy is proud of the Marines." From the time I first joined the Service, when my dear old Marine servant used to look after me and my chest, and bully me if I put on too many clean shirts in the week when we were at sea, until quite recently, when I had some of these excellent men as orderlies about me, I have loved the Marines, and during the ten consecutive years I was executive officer in various ships, ranging from a sloop to an ironclad, I thoroughly learnt to value the qualities of these excellent sea soldiers. I would like to see the Force augmented as is, I believe, proposed by one or both essayists, for I look upon them as the most valuable Reserve we have. I quite admit, as regards the officers, it is very difficult to find suitable and proper employment on board ship; but, if I look back fifteen or twenty years, I consider they are made very much more use of than they were sometime back; and, as regards all battle arrangements, they are thoroughly utilised on board a ship. I do not agree with the proposal that they should be instructed and made watch-keeping officers. Whilst I am on the question of the Marine, I must just notice what has fallen from Major Brittan, who favoured us with his views on the subject. I was rather surprised to hear him say that, as regards discipline and punishment, the Marines were entirely taken out of their own officer's hands when embarked on board ship. That has not been my experience; and certainly, as far as I know, the minor punishments and discipline connected with the Marine Corps are dealt with by the senior officer of Marines. They certainly have been in ships I have commanded. When it comes to questions of leave breaking and other matters concerning the discipline of the whole ship's company, whether they are seamen, marines, or stokers, if the executive officer does not deal with them, it comes to this: that in a ship with 600 or 700 men one man is dealt with in one way and another in another, and they are not punished alike. I do not see how it is possible to alter the system. But as far as the Marines go, and as far as the engine-room staff goes, I am in favour of their own officers dealing with the minor punishments connected with their own work and with their own discipline, and certainly I think my brother-officers will agree with me that as far as regards the Marines this is the practice. I was very much surprised to hear the gentleman who spoke say it was not so.

Major BRITTAN: I said it was not as a matter of right.

Vice-Admiral BOWDEN-SMITH: Possibly not by right; but, at all events, by practice and custom. I will only draw attention to one other subject. Both essayists have touched on the education system and the training of cadets, and as I was once captain of the "Britannia," and as I have myself visited and personally inspected the "Borda," at Brest, the American Naval Establishments at Annapolis, and the Dutch Training School at Helder, I should like to say a few words on this matter. We have been quite recently informed that a new departure is about to be made, and that the boys are to be transferred from the hulks in the river to a college on shore

at Dartmouth; they are to be entered at a slightly increased age, and to remain eighteen months under training instead of two years, as at present. With regard to their being moved to the college on shore, I am glad to hear it. I think the advantages, if any, are in favour of the establishment on shore, so long as the boys can get to the water easily. Where they are now in the ships in the river they are between the hills on either side, and do not get enough sun, and the ships, being moored head and stern, are very much subject to draught, and, consequently, the boys suffer a good deal from colds and coughs, especially in the term between Christmas and Easter; and, I am inclined to think the health of the boys will be considerably improved when they are put in a college on shore. When it first leaked out that the age for entry was about to be increased, I was one of those who hoped the reason to be given would be that the authorities, by increasing the age limit, would see their way to throw the Service open to competition, instead of retaining the nomination system and limited competition, as at present. I also hoped that there would be some scheme proposed by which we could abolish the necessity of having naval instructors in sea-going ships, and I must therefore confess to a certain feeling of disappointment, if I may say so, when we were told that the principal reason for increasing the age of entry was to enable some of the boys to pass some of their time in public schools before joining the Navy. And here I am in accord with Captain Eardley-Wilmot, who advocates open competition for naval cadet-ships. It was unwise to do so when the boys were entered very young; but if we increase their age, I think it might be attempted with advantage, and I agree with him that we should not suffer in any way, but should get a better average all-round boy, and I further agree with Captain Eardley-Wilmot, that every scholastic establishment in England should be placed on an exactly equal footing, and as few restrictions as possible placed on the privilege of entering the Navy. My experience, however, is very different to that of the gallant officer in command of one of the ships in the training squadron, who, when mentioned by Captain Wilmot, found fault with the present training on the "Britannia," and who further expressed surprise because one of the midshipmen who was with him did not know who Tasso was. Well, gentlemen, I should be very much surprised if a midshipman did know who Tasso or any other Italian poet was! I would much rather he knew something about Captain Cook! I believe the boys are exceedingly well taught in the "Britannia" as they were also, I maintain, in my time; and although it is the fashion with some officers to condemn both the system as well as the instruction given, I believe, if you take any number of "Britannia" boys—say a dozen or twenty—and compare them with an equal number of boys from any school in England, the "Britannia" boys will compare very favourably. In conclusion, gentlemen, I think you will agree with me that Commander Honner has well earned the gold medal which the Council of this Institution have awarded him on the recommendation of the referees.

Lieutenant E. H. SMITH, R.N., H.M.S. "Calypso": I fully endorse what Captain Moore says as to the small amount of knowledge which youngsters get of their profession in ironclads. It is wonderful the progress they make in the short time they are in the training squadron. For that reason I sincerely trust that, under no circumstances, will the squadron be done away with, but rather that it may be so increased that we may get an opportunity of having every officer through it. At the present time many of them do not serve in the squadron, and some go to brigs instead. I do not think anybody with knowledge of the difference between brig and squadron work will compare the two trainings. I think it is impossible to compare them. In brigs they have a small amount of sailing work, and practically no heavy spar drill at all; in the squadron there is not a single exercise known to seamen that they do not learn, and there is not a single thing in gunnery which we do not try to teach them. I may say that they have an opportunity of learning everything, tactics included, connected with a Naval officer's work, most thoroughly. As regards work in the squadron,

everything is subordinated to their work as officers. They are at school in the forenoon, but they are always taken from school if there is any work going on on deck, and they are never excused their watch or boat duty on account of school under any circumstances.

Lieutenant W. C. CRUTCHLEY, R.N.R.: The writer of the Prize Essay has touched very largely on the question of the merchant service, Reserve of seamen, both officers and men. He asks in the first place: "Is the Naval Reserve, by its constitution and drill, equal to the position it now occupies in the scheme for manning the fleet?" That is rather a large question, and I may say, as a member of that Force, I am most entirely in accord with the conclusions he draws: that the Naval Reserve, though capable of very great improvement no doubt, still has made great progress within the last twenty years. I think it is becoming generally recognised now that there must be very great affinity between the Navy and the merchant service. The tendency of the merchant service is to build large vessels which will reduce the number of men employed; and, it would almost appear as though we shall revert to first principles, and that every man who goes to sea must be trained as a fighting man. There are a very great number of eminent authorities who hold that opinion somewhat strongly. But the scheme indicated in this paper, that lads should be taken at the age of nineteen or twenty, and trained for five years in the Navy, and then sent back to the merchant service, is, I venture to say, an unworkable scheme. In the first place, you would send a man at the age of twenty-five into the merchant service to take to a business of which he knows nothing. On the other hand, if you apprentice boys for training, say three or four years, first, in the merchant service, and then pass them through the Navy and turn them back into the Reserve to serve in the merchant service, it would be of the very greatest benefit. The merchant service at the present time is not in quite what I should consider a satisfactory condition as far as men are concerned. The number of British seamen gets proportionally worse and worse year after year, therefore I think the system I suggest would be beneficial to both Services. With regard to the officers, it is suggested that there should be two classes—first and second class. I think the suggestion is eminently good, and all men in the merchant service will admit that the more they see of the Navy the more they find and appreciate the advantages to be found in its training, and the more they will avail themselves of it if facilities are given. I think the men who have had twelve months' training in the Navy have turned out remarkably good men; and, if you will carry out that principle a bit further, I think you will find a good Reserve of officers in the merchant service. The restrictions proposed on the ships carrying the blue ensign are most excellent, and I do not know that I have exception to take to any of the statements in the paper. It is a matter of very great satisfaction, I may say, both to myself and to the merchant service generally, that a Naval officer takes so broad and comprehensive a view as to the relations between the Services.

Engineer L. E. THUMWOOD, R.N.: I am very pleased to follow Lieutenant Crutchley with a few remarks about the Engineer Department of the Marine Service. Some disparaging remarks have been made by both prize essayists against the engineers of the mercantile marine; they intimate, with regard to those in charge of the engine-rooms of some of our largest Cunard and other liners, that their room would be better than their company, especially in torpedo-boat service. I can only say I very much regret to see that both prize essayists attribute no ability whatever to, or fail to recognise the ability of, any of the mercantile marine engineers. I may say that I should be proud indeed at any time to have these men as comrades in the engine-rooms even of a torpedo-boat destroyer. One of the essayists goes on shortly afterwards to state that this Naval Reserve engineer is absolutely unknown to the Navy, and he not only states that, but he continues criticising the same officers, whom, he admits, he knows nothing about. I could hardly let that pass without notice. Also, both prize essayists, although

admitting the serious deficiency of Engineer officers in the Royal Navy—and the Gold Medallist, I think, says that we should be 170 Engineer officers deficient even after taking 70 boys from the Engineer College, after only three years' training, to assist in the Navy as officers—omit to discuss any scheme for filling up the junior rank from chief engine-room artificers by promotion to Warrant rank, although admitting the ability and value of these men, by styling them so rightly the backbone of the Engineer Department. They enter as Chief Petty Officers, and if they do not die in the Service they retire as Chief Petty Officers. The second prize essayist mentions a sense of isolation felt by the Engineer officers of the Royal Navy. I do not know any Engineer officer of the Royal Navy who feels socially or professionally in any way this isolation. I may say for myself I have felt very much part and parcel of the Navy. The Essayist mentioned that, certainly in a most graceful manner; still he alludes to a lack of co-operation and sympathy between the executive and the engineering officers of the Service. I deny that it is at all wanting even in time of peace, but in time of trial, rest assured, a perfect co-operation and mutual accord would be found to exist. The subject under discussion is an intensely interesting one to most Naval officers, and the difficulty is to reduce one's remarks to a small compass.

Captain J. M. Rose, R.M.A.: I do not think much comment has been made on my essay. I am very pleased that my ideas should accord with those of the Naval engineers present; they were written with my earnest conviction that they would be for the good of the Service. Major Brittan has given you the ideas of the officers of the Plymouth Division, but who at that time had not read my essay. I think it will be found that those views were entirely in accord with what I have expressed in my essay, and I believe them, as a rule, to be the views of every Marine officer. We do feel that although we are allowed to punish our men by the kindness of the executive officers, there is something lacking in the extent to which we have charge of our own men. We should like to sit on courts-martial at their trials, and that seems to be the ordinary principle of English law. The admiral who spoke just now said it was necessary for the executive officer to punish all those men who had committed such offences as leave-breaking, that it was necessary for the discipline of the ship that the punishment should be the same. But a young Marine going on board ship is in a very different position to a blue-jacket boy who has been accustomed to ship life for some time: the one is accustomed to the routine of the ship, and has not been used to so much exercise ashore; the young Marine has had a very hard training in exercise ashore, and he feels just at first the restraint in a different manner. That difference the Marine officer understands—he understands the Marine; there is a difference that is very hard to define, but I am sure the Marine officer knows the feelings of the Marines better than Naval officers. I have seen it in many cases and, therefore, it may only be in accordance with justice that a different punishment should in certain cases be given by a Marine officer who would be more in sympathy with the men. That is only a side point. Captain Eardley-Wilmot suggests in his essay that we should take over the whole musketry training of the ship. I think that would be a great step in advance. It has been said that it is difficult to find any work for the Marine officer. Surely our knowledge of musketry must be greater than even those gunnery lieutenants who have given some considerable time to the subject. The questions of tactics and fortification are all wrapped up with the question of musketry. We have a higher training in musketry subjects, and we are only too delighted to do any work we can to help on the ship. I do not think we require training in navigation, or to keep watch. I think that that would be at present too great a step. But at any rate in musketry training more assistance to the gunnery lieutenants, I think, we might give, and in many ships I think those Marine officers who have been through the advanced "Excellent" course, and have, therefore, qualified in gunnery to as high a level as the first-class gunnery lieutenants, might be

appointed for gunnery duties to ships not carrying gunnery lieutenants, and even in some cases might replace them. You are constantly complaining that you are short of watch-keepers, yet officers trained to be watch-keepers are excused keeping watch to a considerable extent when performing gunnery duties; we might do that work, and give you the extra watch-keepers without making any addition to the promotion question. We have this very much at heart. Let us help the Navy: our only desire is to make ourselves more useful. If the Council or anyone would only help us in this, it would be some assistance to the aspirations of a body of men who have always, at any rate, been loyal.

Major A. F. GATLIFF, R.M.L.I.: In the Navy we are all specialists, and I shall only speak of my own corps. I wish to point out that in the old days, in times of emergency, the Navy embarked line regiments. Then the time came when you had the press-gang. I believe the law is still in force, and has never been abrogated by Act of Parliament, but the practice is not possible at the present day. We have heard also that the British seaman of the mercantile marine is a diminishing quantity, and, moreover, would be requisite at the outbreak of war to keep up the food supply of the country; therefore, as these sources of gap-filling are cut off, I maintain that the real Reserve of the Navy are the Marines. They are the cheapest to get, and their training takes the shortest time. There are several points in the essays that I would like to refer to. Both Commander Honner and Captain Eardley-Wilmot seem to forget that the value of the Marine is derived from his dual training; he not only serves on board ship, but he serves on land, and I take it the ideal Marine is one who would have served half his time on board ship and half on shore. There is no doubt that the dual training brings forth qualities which are found neither in the sailor nor in the soldier, and as witness to that I appeal to the statement of Lord Charles Beresford. Everybody knows what an ardent upholder he is of the British Blue-jacket; but yet he was forced to say that when Alexandria was put in order from chaos it was due to the Marines. Let me give just one quotation:—"I could never have done this but for the service of 600 Marines from the fleet. It would be impossible to have done it with any other body of men, either soldiers or Blue-jackets. The Marines had all the go and readiness of resource of the Blue-jacket; at the same time they had the firm, steady discipline of soldiers which was so necessary for the arduous, irksome, and responsible duties we had to do." Commander Honner and Captain Eardley-Wilmot seem to have forgotten that point of our dual character. Commander Honner objects to our battalion going to Aldershot. Our aim is to help the Navy and our own corps; we wish to do as well as we can, both on board ship and on shore. We go to Aldershot to learn the best means of fighting on shore in the same way as one goes to the "Excellent" to learn the best naval gunnery. Commander Honner said this movement to send our battalion to Aldershot should be looked upon with suspicion. I cannot see it. We are only trying to do our duty best in our dual capacity. If he thinks we are entirely and absolutely, wholely and solely, for service on board ship, his view is, perhaps, logical; but if he is right, it would be still more so to turn us into Blue-jackets altogether. But that is not our view at all: we think we are, as our motto implies, for service on land and sea—*Per mare, per terram.* As regards this question of Reserves, you cannot, moreover, get a sufficiently numerous Reserve of Blue-jackets from the Navy itself for many years yet. Besides, how are you to get your Reserves on board your ships on a foreign station on an outbreak of war? How are you to get them out of England? You must have them on the spot. I maintain, therefore, that at all our Colonies you should have Marines or Marine Militia or Volunteers, and then they will supply the wastage coming from action or casualty of any sort. Perhaps it has never occurred to the writer to consider the difficulties there would be to get your Reserves on board when war breaks out with a strong naval combination. If you had your Marine Militia or Marine Volunteers at all these ports abroad, you would have them on the spot,

and the Admiralty could put its hand on them at once. One other point I would notice is, that although both essayists speak sympathetically about our employment in the highest ranks, at present we have nothing to look forward to. A boy of good brains who goes into the Navy, or a young officer going into the Army, has a career to look forward to: our career, except for one man, ends at colonel-commandant, and that thought is very chilling. We have no outlet beyond that. It does not matter how good a man is, he can never be employed as a general officer, and of course the conditions of the Service prevent him being employed in the higher ranks of the Navy. If the Admiralty would take the suggestion of Sir Charles Dilke and take over the coaling stations, then you could establish single control by one great department. Take the case of Bermuda. There you have soldiers and sailors serving together. What on earth is the good from a defence point of view of a line regiment, and all the artillery and engineers there? If the admiral knows his business—and I have never heard of one who did not—no hostile force could possibly land there. But, on the other hand, the admiral could not use the linesmen, or gunners, or sappers on board ship, no matter how great his emergency, or how severe his loss. If the Admiralty would take over Bermuda, which is purely a naval base, and put Marines there under a Marine-General, the Admiralty could command the whole thing, the men could get their naval training, and we could have some chance of serving otherwise than in a subordinate position. I thank Admiral Bowden-Smith for the kind way in which he spoke about our corps. We are like the Uitlanders: we desire to attain a certain position to which we think we are entitled, and we do ardently wish to have some real responsibility in the great Service which we have helped to make, and to which we are thoroughly loyal.

Captain GARBETT, R.N., Retired: As I lately had command for three years of one of the Naval Reserve drill-ships, I may say that I agree most cordially with the observations which Captain Eardley-Wilmot makes in his essay with regard to the somewhat unsatisfactory status of the so-called second-class Reserve, and which is the cause of a certain amount of legitimate complaint among the men forming it. I have been often told by men among them, that they feel it a slight to be considered by the Admiralty as only second-class men and to be debarred from certain privileges enjoyed by the first-class. I have never been able myself to understand why the distinction is now kept up between the first and second-class men in the Reserve. The first-class men are rated able seamen, but the second-class men, mainly drawn from the fishing and coasting population round the coast, are only rated ordinary seamen. Now, my experience during the three years I had to do with the Naval Reserve was that, taking them all round, the second-class Reserve men, physically, morally, and as seamen, are at the present day far superior to the general run of the so-called first-class Reserve men. When the Admiralty some time back reduced the complement of Reserve ships we were thrown very much with regard to the ordinary work in the ship entirely on the Reserve, and we have had to wait for weeks when the fishing population did not come on for their drill before we could get men who were competent to do the most ordinary work of seamen on board ship. The so-called first-class men as a rule were helpless, as far as seamanship was concerned; they could not splice or point a rope decently, strop a block, or pull an oar. They were really not seamen in any sense of the word, and it was a mystery to me how many of them ever got their certificates. When the Naval Reserve was established some thirty-five years ago, a splendid body of really fine seamen could be drawn from the beautiful clipper-ships, which at that time, and for some ten years afterwards, carried our trade to all parts of the world; but times are now changed, the clippers have vanished, and in their place we have the "canal-wallah" and "ocean-tramp"; and although men serve still as apprentices in sailing-ships, it is quite impossible for them to remain seamen in the best sense of the term, in a n "ocean-

tramp"; and they do not remain seamen, except in rare cases. Now, the bulk of the second-class Reserve men are, on the other hand, undoubtedly good seamen, because such very large numbers of them spend nearly their whole time in battling with the sea. The East Coast fishermen, both Scotch and English, I believe to be among the finest seamen in the world. They do not remain on their own coasts; they follow the herrings, for instance, down the coast of England, the Channel, and out into the Atlantic; and I believe, if these men had only proper inducements held out to them to join, and the time for drill was increased from four to eight weeks, half of which should be spent on board a regular man-of-war, we should soon have a very efficient Reserve; they are much more amenable to discipline than the first-class men; they learn their drill much quicker, they retain it much better, and in war-time they would be far more valuable as a Reserve than the first-class men, simply because they are on the spot; and I do not see how you can get hold of a large proportion of the so-called first-class men on the outbreak of war. I believe as far as organising them is concerned, it is merely a question of money. Some three years ago, when I was trying to get Naval Reserve men to volunteer to serve in the fleet during the manœuvres scarcely anyone came forward. When the question was discussed afterwards during our annual inspection the men were asked by the inspecting captain why it was that none of them came forward, and the answer was in every case the same – that it was not worth their while. The Admiralty offered £1 bonus in addition to pay, and it was not good enough for them, they made more by remaining on the fishing grounds. They had no objection to serve, but they said they could not afford to lose by it. Therefore, it appears to me that the Reserve can be made far more efficient in a short time, both in numbers and drill, provided the country is only willing to spend the necessary money—I do not think it need be very much—so as to make it worth the while of these fishermen and others to join the Naval Reserve, which they will not do under existing circumstances. Commander Honner proposes to create a Reserve in fifteen or twenty years by his scheme, but we want to increase our Reserves now, and we can only do that by using the present material we have to our hands. A system of short service may provide us with a Reserve in the future; but I doubt it, because I do not believe that any smart youngster, after serving five years in the Navy, will descend to the squalor and discomfort which is the general lot of the merchant seaman of the present day.

Commander the Hon. H. N. Shore, R.N., Retired, being unable to be present at the discussion, has forwarded the following remarks:—

Of the various matters that come under discussion in the essays selected for publication, none are of higher importance than, 1st, the entry and training of executive officers; and, 2nd, the efficiency of the Royal Naval Reserve. Taking the latter first, there can be no doubt that the sweeping assertions of the Gold Medallist as to the indiscipline and inefficiency of the force will come as a painful surprise to many, and as one who had the honour of being closely connected with the R.N.R. for several years, in Scotland and England, I should be sorry to see such a wholesale condemnation of the force go forth to the world without a word of expostulation. If the unfavourable strictures had been based on a long and close association with the R.N.R., on personal experience that is to say, the essayist's opinions would, at least, be entitled to respect, however much we might dissent from them; but, from his own admission, they seem to have been reduced from the very slenderest basis of fact. He leads off with an isolated extract from an article by Lord Brassey; instances the antiquated nature of the armaments of the drill batteries, a remark which applies equally to many ships on the strength of the Navy; and then, after drawing an imaginary picture of life on a fishing boat, proceeds to pass a verdict entirely unfavourable and unfair to the force as a whole. The value of this verdict is somewhat discounted by the author's somewhat naïve admission that "the Navy does not know the Royal Naval Reserve." It would be as well, to say the least, to know something of the

force before condemning it, and it is also suggestive that the essayist has not given the opinion of a single officer who has been connected with the training of the R.N.R. Of course, it is an easy matter to set up an imaginary standard of excellence, and then to condemn off-hand everything that falls short of it. Now, the standard which the essayist has set up, if his observations on this head afford an indication of what is in his mind, is a lofty one. He seems to picture a Reserve equal to take its place, in every way, by the side of the regular seamen of the fleet, highly disciplined, versed in all the latest methods of gun and torpedo warfare, and ready to embark at a moment's notice on board the Reserve ships, without so much as having to disturb a single man, in the vessels of the first line; he speaks of the "demoralising and heart-breaking" results of disturbing the companies of ships in commission, as if this was not an essential condition of every system of Reserve. Well, this is an ideal which every officer would like to see realised; but is it not utterly Utopian? In view of the present imperfect state of things sublunary, we must, alas, be content with a much lower ideal. It is useless inflating our minds with mere moonshine; we must descend to the practical in matters of every-day life, and aim at something that is really within reach. The word efficiency as applied to the Reserve is a relative term, there is no universally recognised standard to which all must conform; the efficiency of our Reserve must be considered relatively to the standard prevailing amongst other Naval Powers. The author of the essay seems to be impressed with the higher standard exacted in other countries; he speaks of our own Reserve men as having "to meet with meagre training, the well-trained men of our possible enemies," and evidently sees much to admire in the Continental systems. Whether the plan of passing hundreds of conscripts through the fleet, and discharging them to civil life after the briefest possible training is a sound way of building up a Reserve, must be left to the judgment of the reader; but to suppose that a body of men who have served three years afloat, and are then sent back to civil life to shift for themselves, constitute a "well-trained" Reserve, is manifestly absurd. I believe I am well within the mark when I say that many foreign officers have grave doubts as to the real value of such a force in the event of war. Captain Eardley-Wilmot, in his comparison of the systems that obtain in our own and foreign Navies, calls attention to the facility with which, say, a French Reserve man would drop into the routine of ship-life, on being called up; though he adds the qualifying remark, "if his service has been fairly recent." There is a world of meaning in the "if"! Now it is a remarkable and highly significant fact that the question of Naval Reserve efficiency has been discussed by all three essayists solely and entirely from the point of view of the drill-sergeant, as if there were no other standard of efficiency. But, surely such a method of treatment is unworthy of the high importance of the subject. Not one of the writers—and this also is highly significant—has attached any importance to the fact of our fleet being entirely recruited by volunteers. Few Englishmen, let alone Naval officers, realise the enormous accession of moral strength, immeasurable by the drill-sergeant's standard, which the British Navy has acquired by the frank acceptance of the voluntary system. I can only add what I have said elsewhere, "the world has yet to be shown what a British fleet can accomplish, manned entirely by volunteers." In discussing the training of executive officers it is noteworthy that all the essayists, while frankly admitting the high professional acquirements of English Naval officers, on the practical side, seek to destroy the very system under which these excellent results have been attained. Why? Because it has for some time been taken for granted that from a scholastic point of view English Naval officers compare badly with those of certain Continental Powers. Assuming this, a certain section of writers have been clamouring for some time past for a higher standard of scholarship amongst Naval officers; and as there is only one way by which this can be attained, by lengthening the educational course, the advocates of "high scientific attainments" seek to raise the age of entry.

Confining our remarks to the essays, it is worth noting the reasons assigned by their authors for the proposed change. The Gold Medallist advocates later entry chiefly on the score of expense. It seems there are numbers of young men about eighteen years old at the public schools who are absolutely yearning for a sea life, "were they but given a chance." There is nothing much the matter with the "Britannia" system, but because it costs £6,000 a year, everything is to be turned upside down in the hopes of getting a cheaper article than we do now—"it seems well worth a trial," says the essayist. Captain Eardley-Wilmot advocates a middle course, though he is greatly impressed with the necessity for raising the scholastic standard, and quotes the evidence of our naval attachés in support of his contention. The opinions of officers who have held the important post of attaché to a foreign Court are, of course, entitled to respect. The life is a pleasant one; they see many interesting State functions, and are even admitted to the dockyards and arsenals under certain restrictions, and, altogether, see a great deal of naval life *on shore*; but I have never yet heard of a naval attaché being permitted to accompany a foreign fleet to sea for a lengthy cruise, and thus it comes about that their opportunities of forming an opinion by personal observation of the practical abilities of foreign officers are of the slenderest, and the sweeping statements they occasionally indulge in must, therefore, be received with reserve. Still, from a scholastic point of view, their evidence is too strong to be disregarded, and on these and other grounds the essayist would raise the age of entry. Of the three essayists, Captain Rose, R.M.A., is the most thorough-going advocate of the scholastic test of naval efficiency. Some little knowledge of seamanship may be useful in after life, though he does not say so; and even professional skill is not to be despised, provided it is not too obtrusive, but for the salvation of a Naval officer it is before all things necessary that he "should be a cosmopolitan, an educated gentleman with considerable scientific acquirements." It seems that "the executive Naval officer has apparently laid himself open to the accusation of being the most illiterate officer in Europe," and to remedy this sad state of things the future aspirant for naval honours is to be kept under school and training till he is twenty, when, so the essayist tells us, "he will be still young enough to pick up a man-of-war's routine." It is distinctly comforting to know that by this time he has gained "his first glimpses of practical seamanship and navigation on board vessels especially attached to the dockyard," and, moreover, that "the youngster's training is complete." One could scarcely wish for a more complete *reductio ad absurdum* of the purely scholastic test of naval efficiency. The "secret of the sea," which our poor benighted and illiterate ancestors only thoroughly mastered after years of arduous service, under every conceivable condition of wind and weather, and climate, may now, it seems be "picked up," along with routine any time after twenty, when the youngster's training is "complete." It was never known till now how vastly superior we are to our ancesters, intellectually. Of course, young men who come to sea so thoroughly equipped for the battle of life are competent to hold any appointment, and are immediately available for promotion; so at least we are led to infer, for the essayist tells us that "to-day, as in the past, it is necessary that the commanding officer of a large ship or fleet should be a comparatively young man, for much nerve, enterprise, and endurance are required. Hence he should be early promoted to his position." In the old days we read of post-captains of twenty-one. Just conceive what a valuable public servant a post-captain of this age would be, under the new dispensation of things! The curious part of it all is that, after advocating a complete turning-upside-down of the present system, with a view to making the Naval officer "a cosmopolitan, and an educated gentleman with considerable scientific acquirements," the essayist calmly informs us that fitness for high command "depends generally so much more on character than on education." Perhaps, after all the essayist is only poking fun at us. Who knows? The fashionable cant of the hour is that, before all things it is essential to the salvation of a Naval officer that he should be

"scientific," and that he may be safely left to "pick up" professional knowledge any time after twenty, or thereabouts, the duties of a modern "seaman" being reducible nowadays to rule-o'-thumb, and the competitive examination test. To ensure a proper supply of the ideal Naval officer with "considerable scientific acquirements," the young man is to be kept at school till he is twenty, by which time the requisite article will be turned out complete. As a matter of fact, however, you can no more "make" young men scientific than you can make them all short and stout. You may stuff their brains with formulas, and problems so that they may pass the examiner's test, but this does not constitute a scientific officer, and, so far as concerns the majority of young men, the time and effort thus bestowed is absolutely wasted. The advocates of scientific training seem to imagine there is some occult virtue in the public school and college course on shore; there may be; but it is astonishing what a number of young men there are who, after years spent in the manner prescribed at prodigious expense, afford no evidence by their after life of having acquired anything but the knack of spending money which others earn; and it is difficult to conceive of such a training being specially adapted for youngsters who intend making the Navy their future career. Of course, if the nation, in its wisdom elects to have its Naval officers scholars and scientists first, and seamen afterwards, why, a long course of school and college life on shore is essential; but how, in the name of common sense, is the "officer" to acquire his sea training in time to permit of his promotion to the higher ranks before he becomes a confirmed valetudinarian? If there is one fact more than another which a connection of some thirty years with the Navy has impressed on my mind, it is that, to ensure the duties of the Navy in time of war being carried out with energy and enterprise, there must be a continuous flow of young officers into the higher ranks; and this impression has since been converted by a pretty extensive study of Naval history into absolute conviction. Naval officers are but human, and the characteristic of age is caution; it is natural that a man who has worked his way up to the higher ranks by years of arduous service should hesitate to stake everything on the result of a dangerous enterprise, the issue of which is absolutely uncertain, while disaster means ruination to himself. With youth it is different; the temperament is sanguine, and with visions of glory and fame rising before him no enterprise seems too desperate. A clever writer has reminded us that at one period of our history it was considered the greatest glory of an officer to bring his ship safe home again! It is time we cleared our minds of cant, and frankly recognised the fact that no examination test can produce the ideal Naval officer, and, moreover, that the vast majority of those who enter the Naval Service never can be "scientific" in the true sense of the word. A love of adventure, combined with the freedom and variety of a sea life, are, and ever must be, the attractions which draw the youth of our land into the Navy. And yet, strange as it may seem, from the time they join till the freshness of youth has been rubbed off, the authorities, in their extreme wisdom, do all they can to disgust youngsters with their chosen career by discouraging all enthusiasm for the sea, and torturing their minds into channels for which they have absolutely no real bent. Is it any wonder, under these circumstances, that so many become soured and disgusted with the life, and think, when too late, they have mistaken their career? How, in the name of reason, are we to keep up a healthy flow of young blood into the higher ranks of the Service if the officer does not begin his professional life till twenty? The comparative youthfulness of our officers, as compared with those in foreign Navies, confers on our Service an immeasurable superiority in time of war—the fact that, at a time when other Naval officers are only just beginning their sea career, our own have amassed considerable experience, and are, in many essential respects, competent sea officers, gives us an incalculable advantage which no amount of "scientific" knowledge can make up for. And yet, to satisfy the clamour of noisy pedants, we are invited to throw all these advantages to the winds, and to set off on a wild

goose chase after a sort of scholastic will-of-the-wisp, called "scientific acquirements"! It is a well-known fact that the mind endowed with a scholastic and scientific bent is the one which accommodates itself to the exigencies of a sea life with the least facility, and, if experience is any guide in this matter, it rarely adapts itself to the rough-and-tumble work of war. The Great Duke used to say his victories were won in the playing-fields—not, be it observed, the class-rooms, of Eton. If Naval history carries any teaching with it, it is that the stamp of officer which comes to the front in war is not that which emerges with *éclat* from the examination-room. All this may seem shockingly old-fashioned and common-place, but it is common sense and the teaching of history; and it is folly to try and persuade ourselves that young men who only take to the water at twenty will be capable of working their way up to the higher ranks while they have youth and energy for great enterprises. There is no royal road to seamanship—I use the word in its modern and most comprehensive sense—the sea only renders up its secrets to those who woo it long and lovingly, and are on terms of the closest intimacy with it. Every day we have awful examples of the fallibility of human judgment; how men who have passed the best years of their life at sea make a slip, a slight error of judgment, which precipitates a noble ship with its human freight into the recesses of the all-devouring ocean. And yet, with these facts staring us in the face, and with the size and value of the machines entrusted to Naval officers increasing every year, there are fanatics amongst us who would persuade us that twenty is full early enough to begin to study the secrets of the sea; or, as Captain Rose, R.M.A., puts it, "it is no longer essential that his physical training should commence at an early age." Whatever may be affirmed to the contrary, the sea life is an unnatural life, from which a certain amount of hardship and discomfort is inseparable, all of which the boy of fifteen or sixteen accepts with good humour, if not absolute delight; while to the young man from the public school or college, with the comfortable accessories which now seem to be regarded as indispensable at these establishments, the novelty of these "unnatural" experiences soon wears off, and leaves a discontented mind which "can't see the use of" having to rough it. After all, is it true that Naval officers are the incompetent illiterates that some smart writers would have us believe? If we understand education to mean a mere parrot-knowledge of formulas and problems in mathematics, why then, doubtless, their education leaves much to be desired; but, if the word is accepted in its widest sense as comprising a knowlege of many subjects which never are, or can be, taught in the schools, Naval officers will be found to compare not unfavourably with the great mass of their fellow countrymen. In any case, to reproach Naval officers for not being accomplished "scholars" or "scientists," is just about as reasonable as to reproach lawyers for not being versed in engineering, or engineers for not being learned in the Roman law. The first and essential point to be considered in any system for the supply of Naval officers to the fleet is that it ensures at an early age the acquirement of what one of the essayists calls "mere professional skill." We should labour for utility rather than *éclat*. But to provide for all the shining accomplishments first, and to leave "mere professional skill" to be "picked up" any time after twenty, is to invert the natural order of things and to convert naval training into a school of pedants.

# NAVAL NOTES.

HOME.—The following are the principal appointments which have been made: Captains—G. N. Pollard to "Malabar"; W. Wilson to "Endymion"; C. Drury to "Hood," when re-commissioned; W. Du V. Hamilton to "Hawke," when re-commissioned; E. H. Gamble to "Talbot"; Count F. Metaxa to "Galatea." Commander—J. P. Montgomery to "Nymphe."

All the ships commissioned for the annual manœuvres were paid off by the end of last month. The "Nelson" has left for the Mediterranean, conveying a new crew to the first-class battle-ship "Hood," which is to pay off and re-commission at Malta; while the first-class cruiser "Endymion" takes out a new crew for the first-class cruiser "Hawke," which also pays off and re-commissions at Malta; it is gratifying to be able to record that the "Hawke" during her late four hours' run at full speed under natural draught maintained an average speed of 19·6 knots. The new second-class cruiser "Juno," which has been built by the Naval Construction and Armaments Company, at Barrow, has arrived at Plymouth; she is to be completed for sea by February of next year.

The Admiralty have ordered the stern torpedo-tubes to be taken out of all ships of the "Royal Sovereign" class, and these vessels will now carry only the submerged tubes. There are two very substantial reasons for this course. Experiments have been made which have demonstrated the possibility of hitting the whiskers of a torpedo by means of Q.F. guns while the weapon is in the tube, and thus hoisting the engineer with his own petard. Then, it has been found on the China station that where the stern tube is reasonably near the water-line, the seas in rough weather fill the tube, and if the torpedo is there, collapse the balance chamber. The trials of the "Eclipse" were specially directed to elucidate this point, but though no accident occurred in that cruiser, owing to her tube being well out of the water, an immunity from accident is not guaranteed to ships less favourably constructed.

Of the five third-class cruisers of the "Pelorus" type, tenders for which were invited some months ago by the Admiralty, Messrs. John Penn and Sons, of Greenwich, will supply and fit the propelling machinery, etc., to two—the "Pactolus" and "Pomone." These vessels will be fitted with two independent sets of three-cylinder triple-expansion engines, designed to develop 7,000-I.H.P., and to drive the ship, when making 220 revolutions a minute, at a maximum speed of 20 knots. Steam for the engines is to be supplied by eight water-tube boilers of the Blechynden type, having a combined heating surface of 17,504 square feet and a grate surface of 351 square feet. The boilers will be designed for a steam pressure of 300 lbs. per square inch, this pressure being reduced at the engines to 250 lbs. per square inch, thus securing at all times an excess of pressure at the boilers over that ordinarily required at the engines. Messrs. Penn and Sons will also supply the propelling and other machinery of the battle-ship "Goliath," shortly to be laid down at the Chatham Dockyard. This vessel will be fitted with twin-screw propelling engines of the three-cylinder inverted triple-expansion type, which, when making 108 revolutions a minute, are designed to develop 13,500-I.H.P., and to drive the ship at about 18 knots. The steam for these engines will be supplied by twenty water-tube boilers of the Belleville type, having a total heating

surface of 24,155 square feet, with a grate surface of 1,035 square feet. The boiler steam pressure will be 300 lbs. per square inch, while the working pressure at the engines will be 250 lbs. per square inch. As the initial steam pressure to be used in both the high and intermediate pressure cylinders of the engines of these latest war-ships is much in excess of that which has until lately obtained, piston slide valves are to be fitted to both these cylinders in the "Goliath," so as to reduce the incidental friction to a minimum.

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The new second-class cruiser "Venus" has completed her steam trials in a most satisfactory manner. She was built and engined by the Fairfield Shipbuilding Company, Glasgow, and her trials were of a most comprehensive and exhaustive character, and practically extended over ten days. The contract stipulated for a speed of 18·5 knots under natural draught, with the engines developing 8,000-I.H.P.; and the result of eight hours' steaming was to show 8,204-H.P. and an average speed of 19¼ knots. The forced-draught trial was equally satisfactory. The "Venus" steamed four hours continuously and developed 9,774-H.P. (9,600 estimated in contract), whilst the average speed was at the rate of 20·18 knots (contract 19·5), being nearly three-quarters of a knot in excess of what was required. Much interest was centred in the coal-consumption trials, the "Venus" being under steam thirty consecutive hours. She left the Nore at 6 o clock in the morning, and the test commenced at 7.45 a.m. Her machinery worked admirably, and she was able to reach the Eddystone Lighthouse before the return trip was commenced at 9.30 p.m., and she was back again at the Nore at a quarter to 2 on the following morning. She steamed throughout with open stokeholds, the draught being purely natural, and the H.P. attained was 4,876 (800 to the good), and the average speed per hour was 16·8 knots, although only going at half-speed and running under the easiest conditions. The consumption of fuel was very satisfactory, being only 1·6 lb. per I.H.P. per hour. Other days were devoted to anchor, circle, and steering trials, and the "Venus" acquitted herself well in all the tests to which she was subjected.

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The new torpedo-boat destroyer "Spitfire," built by the Armstrong firm at Elswick, has also completed her trials satisfactorily; she took a new course upon going on her full-power trials, as, after performing six runs over the measured mile off the Maplin Sands, she steamed ten miles below the North Foreland and back. The average speed attained by the "Spitfire" during six runs on the measured mile was at the rate of 27·775 knots, and for the full three hours' trial 27·461 knots. The mean steam-pressure in the boilers was 195 lbs. per square inch, and the mean revolutions were 398 per minute, whilst the average I.H.P. developed by the engines was 4,527. The contract stipulated for 4,000-H.P. and a speed of 27 knots. As the sister-vessel, the "Swordfish," failed to reach the maximum speed by a quarter of a knot, the result of the trial of the "Spitfire" was regarded as extremely satisfactory.

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The trials of the new first-class cruiser "Terrible" have had to be interrupted and the ship has returned to Portsmouth, owing to serious defects having developed in her machinery, and the repairs are likely to take some weeks. The first stage of her trials, namely, running for thirty hours at a stipulated 5,000-I.H.P., was quite successful, the mean of the power actually realised being 5,110. Considerable importance was attached to the trial, as hitherto the largest British war-ships supplied with water-tube boilers have been the gun-boats "Speedy," "Sharpshooter," and "Spanker," with a displacement of 830 tons, whereas the "Terrible" displaces 14,200 tons. Of this weight 8,452 is absorbed by the hull, which measures 500 feet between perpendiculars with a beam of 71 feet, while the engines and forty-eight boilers weigh 2,250 tons. The engines are of the four-crank triple-expansion type, each with one high-pressure cylinder of 45 inches, one intermediate of 70 inches, and two low-pressure cylinders of 76 inches diameter with a 48-inch stroke. The

cranks of all the cylinders are at right angles. There is a main condenser to each set of engines, which have a collective surface of 25,000 square feet, and the circulating water is supplied by four centrifugal pumps, each having suction and discharge pipes 19 inches in diameter. Half the boilers have eight elements and the other half seven elements, there being twenty tubes in each element. There is a total grate surface of 2,100 square feet, and the total heating surfaces measure 60,000 square feet. The four-crank type of engine has been adopted to reduce the otherwise enormous size of the low-pressure pistons, thus allowing of the engines being run at the high speed of 110 revolutions a minute, which it is anticipated will be required, when they are to develop 25,000-H.P., while running at full speed. As the group of boilers covers a very large area it has been necessary to provide four funnels, thus giving a direct lead of uptakes and improving the habitability of the ship in restricting to a minimum the openings in the protective deck, which extends from stem to stern. The boilers are capable of bearing a pressure of 260 lbs. to the square inch, but for the purposes of the trial only sixteen boilers were used, and the pressure varied from 220 lbs. to 250 lbs.

The trial commenced at 11 o'clock on the 5th August, in the Channel. The "Terrible" made four runs over the measured mile in Stokes Bay, and with one-fifth of her H.P. gave a mean speed of 13·4 knots with 64½ revolutions a minute. As the roadstead was crowded with ships an opportunity was afforded of testing the "Terrible's" steering qualities at a low, and therefore disadvantageous, speed, and she answered her helm admirably. Her crew numbered 600 men, and the majority of the stokers were men who had received training in the "Sharpshooter" and had been employed in navigating the "Terrible" and "Powerful" to Portsmouth. On leaving the measured mile, the ship rounded the eastern end of the Isle of Wight and had a run down channel. The Eddystone Lighthouse was reached at 6 o'clock the next morning, when an easterly course with head to wind was shaped, and at 5 p.m. the run was concluded. It was found that by eliminating the first and last three hours, and taking the results of the intermediate twenty-four hours, the coal consumed was 141 tons, giving for a vessel with a coal capacity of 3,000 tons an average of less than six tons an hour.

The "Terrible" weighed again at 6 a.m. on the 7th, for her thirty hours' trial at 18,000-I.H.P., and by half-past eight had worked up to 19,000-H.P., which gave her a speed of 19 knots, but in less than an hour there was a "groaning" in the starboard engine, which turned out to be caused by an accumulation of pressure inside the vacuum ring in the slide valve. The engine was stopped to admit of a re-adjustment of the washers, but when the engine was again worked the same defect was discovered, and it was decided to make for Plymouth, and remain in the Sound while the engine cooled down, and the defect was made good. On arrival there, however, the Admiralty decided that the ship should return to Portsmouth for an examination of the machinery and the necessary repairs. It is now stated that proper allowance has not been made for the expansion of the machinery when it gets hot, and that, consequently, as soon as that takes place, part of the machinery becomes out of line, and some difficulty will be experienced in remedying the defect.

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On the 11th ult. the torpedo-boat destroyer "Star" was launched from the Howdon yard of the Palmer Shipbuilding and Iron Company, Limited. The vessel is the first of eight of the same class which are being built by the Jarrow firm for Her Majesty's Navy. Her dimensions are:—Length, 215 feet; beam, 20 feet 9 inches; and the displacement is about 300 tons. Her armament consists of one 12-pounder Q.F. gun forward on the conning tower, with four 6-pounder Q.F. guns on the broadside, and one 6-pounder on a platform aft. There are also two revolving torpedo-tubes on deck, arranged to fire on either broadside. The builders have guaranteed a speed of 30 knots per hour, and the machinery, which

has been designed by them, consists of two sets of triple-expansion engines, steam being supplied by four of Reed's patent water-tube boilers. A sister-vessel, the "Whiting," was launched from the same yard on the 26th ult.

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Orders have been placed for the building of twenty 30-knot torpedo-boat destroyers in addition to the twenty-eight now in course of construction. The names of the new vessels, and the firms to be entrusted with their building are:—"Albatross," "Coquette," "Cygnet," and "Cynthia," Thornycroft and Co., Chiswick; "Bullfinch," "Cheerful," "Dove," and "Mermaid," Hawthorne, Leslie and Co., Newcastle; "Arab" and "Kestrel," J. and G. Thomson, Glasgow; "Fawn" and "Flirt," Palmer's Shipbuilding Company, Jarrow-on-Tyne; "Violet" and "Sylvia," Doxford and Sons, Sunderland; "Otter" and "Leopard," the Naval Construction and Armaments Company, Barrow-in-Furness; "Fairy" and "Osprey," Fairfield Shipbuilding Company, Glasgow; "Express" and "Gypsy," Laird Bros., Birkenhead. These vessels vary in length from 210 to 215 feet, and in beam from 19 feet 6 inches to 21 feet 6 inches. They will all be fitted with water-tube boilers, and are guaranteed to attain, on a three hours' trial, a mean speed of 30 knots. The armament of each vessel will consist of one 12-pounder and five 6-pounder Q.F. guns, besides discharges of the single-revolving type, for Whitehead torpedoes. The other 30-knot destroyers now building are the "Quail," "Virago," "Thrasher," "Sparrowhawk," "Earnest," "Griffon," "Locust," "Panther," "Seal," and "Wolf," by Laird Bros.; "Desperate," "Fame," "Foam," "Mallard," "Angler," and "Ariel," by Thornycroft and Co.; "Avon" and "Bittern," by the Naval Construction and Armaments Company; "Brazen," "Electra," "Recruit," and "Vulture," by J. and G. Thomson; "Star," "Whiting," "Bat," "Chamois," "Crane," and "Flying Fish," by Palmer's Shipbuilding Company. Of the twenty newly ordered destroyers, it has been decided to attach eight to Portsmouth, six to Devonport, and six to Chatham. The vessels for Portsmouth, are:—"Bullfinch," "Dove," "Cheerful," "Mermaid," "Fawn," "Flirt," "Violet," and "Sylvia." For Devonport:—"Otter," "Leopard," "Fairy," "Osprey," "Gipsy," and "Express." For Chatham:—"Arab," "Kestrel," "Albatross," "Coquette," "Cygnet," and "Cynthia." These vessels will be sent to their respective ports as soon as they are ready to leave the contractors' hands, but in no case is delivery expected before April next. Of the twenty-eight 30-knot destroyers previously ordered, which are to be completed for sea during the present financial year, Portsmouth and Devonport will each have ten, and Chatham will have eight, as follows:—Portsmouth—"Brazen," "Electra," "Recruit," "Vulture," "Star," "Whiting," "Bat," "Chamois," "Craven," "Flying Fish." Devonport:—"Quail," "Sparrowhawk," "Virago," "Thrasher," "Earnest," "Griffon," "Locust," "Panther," "Seal," and "Wolf." Chatham:—"Desperate," "Foam," "Fame," "Mallard," "Angler," "Oriel," "Avon," and "Bittern." Of the forty-two 27-knot destroyers only two—"Fervent" and "Zephyr"—remain to be delivered by the contractors. These will be sent to Devonport when they have completed their trials.

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The Admiralty have been trying for some time past to solve the problem how to communicate effectually and promptly, not only between the bridge and the engine-room of a war-ship when she is steaming at high pressure, but between all parts of the ship. The Service voice pipe has long been condemned as a source of worry to all who have been called upon to use it, while the Admiralty have prudently hesitated before introducing the telephone, except in such parts of a ship as are not disturbed by the rattle of machinery or affected by electric currents. During last year's manœuvres the Homacoustic voice pipe was tried on the cruiser "Fox," and although it was not a success at first, it was found that when three

seamen from the deck and three stokers from the engine-room—one of each rating to serve in each watch—had become acquainted with each other's voices, the sound could be satisfactorily heard. Since then the apparatus, which has been so improved upon as to absolutely insulate the sound, has been tried with good results in the torpedo-boat destroyers, and an installation has been put into the "Eclipse." One side of the ship has been supplied with the Service voice pipe and the other side with the Homacoustic apparatus, and on her steam trials the latter appears to have given excellent results. An ideal voice pipe would convey the sound distinctly, no matter who the speaker might be, but having regard to the overwhelming noise of the engine-room this has hitherto been found to be impossible. The importance of rapid communication to the engine-room is, however, so great, that even if six men have to be specially trained for the duty great advantage will accrue to the Service. As, then, there are manifold objections to the introductions of such a delicate apparatus as the telephone to the engine-room, should the further trials on the "Eclipse" prove satisfactory there is every reason to hope that the Service voice pipe will give way to the Homacoustic apparatus, while if this new departure involves an extension of specialism it also effects an invaluable increase in efficiency.

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The Admiralty will pay in subsidies this year to the Cunard, Peninsular and Oriental, White Star Line, and Canadian Pacific Steamship Companies the sum of £48,620, an increase of £3,137 on the amount paid during the last twelve months. The vessels, with the amount of subsidy for each, are as follows :—Cunard Company—"Campania" and "Lucania," £7,500 each; White Star Line—"Teutonic," £7,285; "Majestic," £7,396; P. and O. Company—"Himalaya" and "Australia," £3,375 each, "Victoria" and "Arcadia," £2,438 each; Canadian Pacific Company—"Empress of India," "Empress of China," and "Empress of Japan," £2,437 each. In addition to this, the companies engage to hold the following steamships at the disposition of the Admiralty without further subsidy :—White Star Line—"Britannic," "Germanic," and "Adriatic"; Cunard Company—"Etruria," "Umbria," "Aurania," and "Servia"; P. and O Company—"Britannia," "Oceana," "Peninsular," "Oriental," "Valetta," "Massilia," "Rome," "Carthage," "Ballarat," and "Parramatta." A reserve stock of 4·7-inch breech-loading guns and of machine-guns, with the necessary mountings and fittings, has recently been supplied in lieu of muzzle-loading guns for the ready armament of these vessels in the event of their being required. As a precaution against delay, a merchant cruiser reserve depôt has been established on each station at which the vessels call, so that a merchant ship can be converted into a war-vessel within a very short time, in fact within a few hours if she happened to be at one of the naval depôt ports.

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An important trial was held on 29th July on board the "Nettle" of an experimental Harveyized armoured plate, manufactured by Messrs. John Brown and Co. (Limited), of the Atlas Works, Sheffield. The dimensions of the plate were 8 feet by 6 feet by 6 inches. Five Holtzer projectiles, weighing about 100 lbs. each, were fired at it with the full charge of 48 lbs. E.X.E. powder, giving a velocity of 1,960 foot-seconds. All the shots were broken up, fragments of two only very slightly entering into the wood-backing. Notwithstanding the extraordinary resistance thus given, the toughness of the plate was so great that only one very slight hair-crack was perceptible after the firing of the fifth shot.—*The Times* and *Naval and Military Record.*

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AUSTRIA-HUNGARY.—The Naval Estimates for 1897 amount to 10,381,060 florins for the Ordinary Budget, and 3,600,200 florins for the Extraordinary Budget, or a total of 13,981,260 florins, shewing an increase of 15,000 florins in the Ordinary and of 485,000 florins in the Extraordinary Budgets, or

a total increase of 500,000 florins over the Estimates for the current year. The following are some of the most important items:—The pay and allowances for 623 officers on the active list amount to 673,000 florins, the establishment being made up of:—1 admiral, 2 vice-admirals, 6 rear-admirals, 17 senior (linienschiffs) captains, 22 frigate-captains, 35 corvette-captains, 120 lieutenants 1st class, 60 lieutenants 2nd class, 180 sub-lieutenants, and 180 cadets and aspirants. A sum of 1,275,820 florins is demanded for 9,318 effective petty-officers, seamen, and engine-room staffs, and 2,071 recruits and boys under training. The higher engine-room staffs number 150 of all grades, and a vote of 203,880 florins is required for them. The Staff of the Hydrographical Department consists of 7 officers, of which the director is a rear-admiral, the pay and allowances amounting to 16,400 florins.

The Naval Academy and lower Naval School have a staff of 28 professors and instructors, and the vote amounts to 37,250 florins.

In the Ordinary Estimates a sum of 1,016,000 florins appears for new constructions, apportioned as follows:—a fifth vote of 450,000 florins for the coast-defence battle-ship "Monarch" (Ersatz "Habsburg"); a second vote of 440,000 florins for torpedo-cruiser "A" (Ersatz "Greif"); a first vote of 40,000 florins for torpedo-cruiser "B" (Ersatz "Helgoland"); and 86,000 florins for replacing boilers in certain ships.

A further sum of 2,040,000 florins appears in the Extraordinary Estimates for new constructions, and is apportioned as follows:—a fifth vote of 600,000 florins for the coast-defence battle-ship "Wien"; a fourth vote of 640,000 florins for the coast-defence battle-ship "Buda-Pest"; a second vote of 650,000 florins for the new ram-cruiser "D"; a third vote of 140,000 florins for six sea-going torpedo-boats.

A sum of 80,000 florins is required to continue the construction at Teodo of a coaling and torpedo-boat station; and a vote of 1,293,000 florins is demanded for guns, gun-mountings, torpedoes, submarine mines, and cables.—*Voranschlag* 1897. *B. Kriegs-Marine* (*Ordentliches und Ausserordentliches Erforderniss*).

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The Austrian Naval Manœuvres have come to an end; they lasted from the 1st April until the 15th August. Vice-Admiral Baron Spaun hoisted his flag in command on board the battle-ship "Tegetthoff," and had under his orders:—

First-class cruisers—"Kaiserin Maria Theresia," "Kaiser Franz Josef," and the "Kaiserin Elisabeth," the latter flying the flag of Rear-Admiral von Seeman, the second in command.

Torpedo-gunboats—"Spalato," "Planet," "Trabant," "Satellit," "Blitz."

Torpedo-depôt-ships—"Pelikan" and twelve torpedo-boats.

For the first period the ships were manœuvring in company for Fleet Tactics, and for the second period Vice-Admiral Spaun with the "Tegetthoff," "Maria Theresia," "Franz Josef," and one of the torpedo-gunboats was operating against Rear-Admiral von Seeman, who had the rest of his ships under his orders. No details are available, as the operations were carried on in connection with special problems of coast defence, and no reports have been allowed to be published.

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The new torpedo-aviso "Magnet," built by the Schichau firm at Elbing for this Government, has successfully completed her trials, having averaged a mean speed of 26 knots for three hours, being 2 knots over the contract speed. Her dimensions are as follows:—Length, 220 feet; beam, 26 feet 6 inches; and with a mean draught of 9 feet she has a displacement of 510 tons. Her coal stowage is 105 tons, giving her at 12 knots speed a radius of action of 4,000 knots. Her engines develop 6,000-I.H.P., and her armament consists of three discharges for 18-inch torpedoes and six 4·7-inch Q.F. guns. The new sea-going torpedo-boat "Natter," built by the same firm, has also completed her trials successfully,

having attained a mean speed of 26·5 knots during a three hours' run, being 3 knots in excess of the contract. The engines develop 2,300-I.H.P., the boilers being Thornycroft's water-tube. The "Natter" is 150 feet long, with a beam of 16 feet 6 inches, and a displacement of 152 tons. The coal stowage is 30 tons, which gives at 12 knots speed an action-radius of 2,500 knots. She carries three tubes for 18-inch torpedoes and two 3-pounder Q.F. guns.—*Mittheilungen aus dem Gebiete des Seewesens.*

BRAZIL.—On the 25th ult., was launched from the Elswick shipyard, Newcastle-on-Tyne, the "Barrozo," a cruiser built to the order of the Brazilian Government. The "Barrozo" is built of steel, her under-water portions being sheathed with wood and coppered. Her principal dimensions are :—Length, 330 feet; beam, 43 feet 9 inches; draught, 16 feet 10 inches; and displacement 3,450 tons. She is protected throughout the whole of her length by a curved steel armour deck. This deck completely covers all the machinery, magazines, and steering gear. and additional protection is afforded by the reserve coal bunkers, which are carried along the vessel's side to a height of about 6 feet above the water line. With full bunkers the vessel will be able to traverse a distance of about 8,000 knots at a moderate speed. The vessel is fitted with twin screws and machinery of 7,500-I.H.P. She is expected to attain a speed of 20 knots. The "Barrozo" will be provided with guns of Elswick pattern, the armament comprising six 6-inch Q.F.'s of 50 calibres in length, four 4·7-inch Q.F.'s of 50 calibres, ten 6-pounder and four 1-pounder Nordenfeldts, four Maxim guns, and two field guns. She will also have three torpedo-tubes. The six 6-inch guns are arranged to fire three ahead and three astern.—*Information supplied by Sir W. Armstrong and Company.*

CHILI.—The new torpedo-gunboat "Almirante Simpson," built and engined by Messrs. Laird Brothers, Birkenhead, for the Chilian Government, has made her official trials. The runs were made in accordance with the Admiralty conditions on the measured mile at Skelmorlie, with an average of 21½ knots on six runs on the measured mile, and a mean speed for three hours' running of 21¼ knots, the contract speed being 21 knots. On the natural-draught trial of six hours' duration a mean speed of 17¾ knots was obtained with ½-inch air pressure, being ¾ knot in excess of contract, the coal consumption in both cases being very light. The vessel is similar to the "Almirante Lynch" and "Almirante Condell," built by the same firm for the Chilian Government in 1890, and Her Majesty's ships "Onyx" and "Renard," built in 1893. Her length is 240 feet, beam 27 feet 6 inches, and she is built of steel. The thickness of the side plating abreast the machinery is increased to afford additional protection. She has a topgallant forecastle and half-poop, which give accommodation for officers and crew. The builders have also supplied and fitted the armament, which consists of one bow and two broadside 18-inch torpedo-tubes, two 4·7-inch Q.F. guns of Armstrong's most modern type, four 3-pounder Q.F. guns, and two rifle calibre machine guns by Maxim-Nordenfeldt. The machinery consists of two sets of triple-expansion engines driving twin screws supplied with steam at 200-lb. pressure from four water-tube boilers of the modified Normand type, first introduced by the builders, and has extra large evaporators and distillers. This vessel has been rapidly constructed, the order only having been placed in September of last year.—*The Times.*

FRANCE.—The following are the principal promotions and appointments which have been made: Rear-Admiral—P. C. L. Dieulouard to command the third division of the Mediterranean Active Squadron. Capitaine de Vaisseau—J. P. A. Besson to "Iphigénie." Capitaines de Frégate—E. M. Picard, E. L. Ternet, P. Meunier, to Capitaines de Vaisseau.—*Le Moniteur de la Flotte.*

The trials of the first-class battle-ship "Charles Martel" have been interrupted

on account of a crack in the main steam pipe of the starboard engine, fortunately discovered in time; the ship has returned to the dockyard at Brest, where it is estimated the repairs will take from six weeks to two months. The new second-class cruiser "Descartes" has practically completed her steam trials; on her last run at 18 knots speed the engines developed 6,820-I.H.P., making 123 revolutions; the coal consumption per H.P. per hour was 0·793 kilogramme, and the consumption per square metre of grate 85 kilogrammes. It has been found that the stability of the ship is far from satisfactory, and important alterations will have to be made to insure her safety in this respect. She was constructed by the Forges et Chantiers de la Loire, but the necessary work is to be done at Brest. The new armoured first-class cruiser "Pothuau," built at Havre, has arrived at Cherbourg for her preliminary contractor's trials. The trials of the new armoured first-class cruiser "Bruix" have again been interrupted, one of the funnels becoming red-hot through some defects in the combustion chambers of the furnaces, and defects in her condensers showing themselves.

Vice-Admiral Gervais will relinquish the command of the Active Squadron of the Mediterranean Fleet on the 10th October. He is to be succeeded in the command by Vice-Admiral Cavelier de Cuverville, at present commanding the Mediterranean Reserve Squadron, and it is said that Vice-Admiral Humann will obtain the command thus vacated.

The Minister of Marine has approved of a tender for the construction of six first-class torpedo-boats at Bordeaux, to be numbered 206 to 211. The trials will take place at Rochefort, and the first boat is to be delivered in fourteen months and the remainder at intervals of a month, the whole to be completed in nineteen months. The Minister has further directed that a commencement is to be made at Rochefort with the new third-class cruiser "$K_1$," provision for which was made in last year's Budget. Her dimensions will be as follows:—Length, 316 feet 8 inches; beam, 40 feet; and with a mean draught of 15 feet 10 inches her displacement will be 2,452 tons. The engines are to develop 8,500-I.H.P., and to give a speed under forced draught of 20·5 knots. She will carry a crew of 234 officers and men, and is to be named the "D'Estrées." Her armament will consist of four 12-centimetre (4·7-inch) Q.F. guns, five 6-pounder Q.F., and six 1-pounder Q.F. guns.

Trials with the Temperly coal transporter have been conducted at Toulon by the "Brennus," "Courbet," "Casabianca," and "Troude." The transporter is mounted in the steam collier "Lutécia," and the trials have been satisfactory. The "Brennus" in calm weather at sea took in 300 tons in four-and-a-half hours; but on the following day the "Courbet," on account of the rough state of the sea, had to make her trial inside the harbour at a buoy; the rate of coaling in this case is not given.

The gun trials of the new first-class battle-ship "Jauréguiberry" which commenced off Toulon on 25th August, had to be discontinued owing to an accident to the recoil cylinder of the guns in the after turret. It is said the repairs will take several months to effect, and possibly the guns may have to be landed.

The following account is given of the recent machine-gun accident in the Mediterranean Fleet on 17th August, when several Hotchkiss bullets from the torpedo-cruiser "Vautour" struck the flag-ship "Brennus," seriously wounding one man. The practice was being carried on at a target towed 400 metres astern of the battle-ship, each ship opening fire in succession when abreast of the target, the speed being 8 knots. The fleet had already nearly all passed the target once when the "Vautour" opened fire from one of her 37-millimetre Hotchkiss guns, and those on board the "Brennus" were soon unpleasantly aware that some mistake had been made by some of the bullets whistling round them; luckily the "Vautour's" gun was not loaded with the full-service projectile, a rifle calibre tube being in use, or the consequences would have been much more serious; as it was, ten shots struck the upper works of the flag-ship, near where the Admiral and his staff were standing,

one bullet breaking the glass of the Admiral's charthouse and another seriously wounding the helmsman in the foot. The practice was at once discontinued, and the man who fired the gun on board the "Vautour" was placed under arrest in irons. This man was tried by court-martial on the 29th ult., the defence being that the accident was caused by the state of the sea and wind and motion of the "Vautour"; the court took this into consideration as an extenuation, and sentenced the man to fifteen days' imprisonment. The court-martial on the officers of the "Audacieux," sunk after collision with the "Chevalier" during the recent manœuvres, was to be opened on the 5th inst.—*Le Temps* and *Le Moniteur de la Flotte.*

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Further details would seem to show that in the final stage of the manœuvres, the hostile squadron under Vice-Admiral Cavelier de Cuverville did not, as was first reported, have things all its own way. It may be recalled that the French or Defending Squadron "A," under the command of Vice-Admiral Gervais, was lying at Bougie and Philippeville on the Algerian coast, when hostilities broke out; and that the enemy "B," under the command of Vice-Admiral de Cuverville, was anchored at Algiers and Dellys, which were his coaling stations and bases of operations. The coast-defences and torpedo-boats of the Défenses-Mobiles of Toulon and Corsica were also mobilised for the defence of the coasts of Provence and Corsica. On the declaration of war, Admiral de Cuverville started his cruisers and two fastest battle-ships, the "Magenta" and "Neptune," under Rear-Admiral de Slane, to ravage the coasts of Provence, while he followed with the main body of his squadron, his idea apparently being to draw the French Defending Squadron from the Algerian coast to defend the coasts of Provence and Corsica. In this he partially succeeded; Rear-Admiral Fournier, who pursued with the fast cruisers of the "A" Squadron, only getting into touch with Rear-Admiral de Slane after the latter had destroyed the signal stations along the coast between St. Marguerite and Mont Boron and bombarded various coast towns; not finding himself strong enough to interfere with the enemy's movements, Rear-Admiral Fournier rejoined Admiral Gervais, who in the meantime had detached the "Redoutable" and "Bugeaud" to destroy the enemy's coaling station at Dellys; this was accomplished after some hours' fighting, the "Redoutable," however, losing two-thirds of her fighting value. No meeting took place between the squadrons; but Admiral de Cuverville, in spite of his successful raid, has been adjudged to have been defeated, as his coaling base having been destroyed, the ultimate capture of his fleet was considered certain.

Since the manœuvres the Active Squadron of the Mediterranean Fleet has been organised as follows:—

BATTLE-SHIPS.

| *1st Division.* | *2nd Division.* | *3rd Division.* |
|---|---|---|
| "Brennus" (flag of Commander-in-Chief) | "Dévastation" (flag of Rear-Admiral Pottier) | "Magenta" (flag of Rear-Admiral Dieulouard) |
| "Marceau" | "Amiral-Baudin" | "Courbet" |

LIGHT DIVISION.

| *1st Division.* | *2nd Division.* | *3rd Division.* | *4th Division.* |
|---|---|---|---|
| "Bugeaud" | "Troude" | "Vautour" | "D'Iberville" |
| "Faucon" | | | "Casabianca" |

TORPILLEURS-DE-HAUTE-MER.

"Filibustier," "Tourmente," "Kabyle," "Sarrazin," "Éclair."

The first-class armoured cruisers "Amiral-Charner" (flag), "Latouche-Tréville," and "Chanzy," have renewed their independent formation under Rear-Admiral Fournier as the School of Instruction. Vice-Admiral Rieunier, ex-Minister of Marine, and now Senior Inspector-General of the Navy, has arrived at Toulon to carry out the inspection of the squadron. This will include a series of manœuvres extending over several days. The Inspector-General will be required to report upon the practical results of the establishment

of the school, and to express an opinion either for or against its maintenance. The school was established at the end of last year by the then Minister of Marine, M. Lockroy.

The manœuvres n the Channel were carried out by the Squadron of the North between the 6th and 26th July, strengthened by four sea-going torpedo-boats mobilised at Brest and Cherbourg, and the Défenses-Mobiles of the four arrondissements of Cherbourg, Brest, Lorient, and Rochefort. The squadron, under the command of Vice-Admiral de Premésnil, consisted of the following ships:—

First-class battle-ship—"Hoche" (flag of Commander-in-Chief).
Coast-defence battle-ships—"Bouvines" (flag of Rear-Admiral de Courthille), "Tréhouart," "Valmy," "Jemmapes."
First-class armoured cruiser—"Dupuy-de-Lôme."
Second-class cruisers—"Friant," "Chasseloup-Laubat."
Third-class cruiser—"Coëtlogon."
Torpedo-cruiser—"Épervier."
Torpedo-avisos—"Lance," "Salve."
The manœuvres were divided into three periods.

The two divisions of the squadron first proceeded to sea on the 9th July, the Reservists called out for training having all joined their respective ships, and acted independently for preliminary training, visiting different ports on the coast between Brest and Cherbourg; they then amalgamated for fleet evolutions, and afterwards separated again, one division under the Vice-Admiral proceeding to Brest, and the other under the Rear-Admiral to Cherbourg to fill up with coals and provisions, and pass the general holiday of the "Fête nationale" on 14th July in port.

The manœuvres took place for the second period between Cherbourg and Dunkerque. Both divisions united and attacked the different sections of the mobile-defence of Havre, Calais, and Dunkerque; the divisions then separated, the Vice-Admiral with the first proceeding to Quiberon, and the Rear-Admiral with the second to Boulogne for provisions, etc.

For the third period the squadron was reconstituted into three divisions, the first two of which, under the command of the Vice-Admiral formed the defending force, composed as follows:—

First Division (A 1)—"Hoche," "Tréhouart," "Friant," "Lance."
Second Division (A 2)—"Valmy," "Jemmapes," "Chasseloup-Laubat," "Salve."

Third Division (B) representing the enemy under the command of the Rear-Admiral—"Bouvines," "Dupuy-de-Lôme," "Coëtlogon."

The torpedo-boats of the squadron were formed into a Light Division under the leadership of the "Épervier," and were attached to the defending squadron.

The scheme of operations was as follows, and was practically the same as has been carried out in some previous years, viz., an enemy's squadron, after entering the Channel, was to endeavour to bombard the coast and at the same time avoid an action with the defending fleet. Division B was to be at Dunkerque on the morning of the 22nd July; Division A 1 at Brest on the morning of the 23rd; Division A 2 at Cherbourg on the same date, and the "Épervier" with her torpedo-flotilla either at Boulogne or Calais on the evening of the 22nd. The speed of the defending vessels was restricted to 11 knots, that of the attacking force to 12. The operations commenced at midnight on the 24th-25th; Admiral Courthille being aware that the defending squadron was divided, his object was to prevent their junction if possible; he was not allowed to attack Cherbourg, but if on arrival off that port he found that A 2 had left, he could either pursue it or bombard the coast between Dunkerque and Brest.

The accounts of what actually happened are extremely meagre. The enemy appear to have passed Calais during the forenoon of the 25th, arriving before Cherbourg about midnight, off which port he cruised until the morning, when he disappeared, steering to the W.N.W. The Second Division A 2 leaving

Cherbourg a little after midnight on the morning of the 25th, effected a junction with A 1 to the north of Batz about 11.30 p.m. of the same day; A 1 having left Brest at 5 p.m. that afternoon. Squadron A having then received reports from the signal stations at La Hague and Cape Levi, shaped course to the East and came in touch with the enemy on the morning of the 27th, who, however, soon disappeared from sight again, steering to the West. Eventually, on the evening of the 28th, Rear-Admiral de Courthille arrived at Cherbourg, signalling that the manœuvres had ended.—*Le Temps, Journal des Débats, Le Moniteur de la Flotte,* and *Le Petit Var.*

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ITALY.—The naval manœuvres began on the 31st August, Admiral H.R.H. the Duke of Genoa having the supreme command, with Captain Bettolo as his Chief of Staff, and his flag flying in the Royal yacht "Savoia." The theme of the operations is as follows:—An enemy in superior force determines to attempt a landing, cut the communications with the interior and bombard the coast towns; the two divisions of his fleet, however, are, at the outbreak of hostilities, lying at different bases, and although united his fleet is superior to that of the defender, yet his divisions singly are inferior; his first object, therefore, is to effect a junction of his two divisions, and then defeat his opponents, so as to establish an absolute command of the sea before commencing his operations against the shore. The object of the defenders is to prevent a junction of the two hostile squadrons, overwhelm them singly if possible, and frustrate every attempt at bombardment or landing. The operations are confined to the Western coasts and islands.

The defending force consists of the Active Squadron, constituted as follows, under the command of Vice-Admiral Canevaro, who has Captain Carnevali as his Chief of the Staff:—

First Division—
- Battle-ships—"Sicilia" (flag-ship of Commander-in-Chief), "Sardegna."
- Torpedo-ram-cruisers—"Marco Polo," "Piemonte."
- Torpedo-cruiser—"Partenope."

Second Division—
- Battle-ships—"Morosini" (flag-ship of Rear-Admiral E. Gualterio; Captain Amoretti, Chief of the Staff), "Andrea Doria."
- Torpedo-ram-cruiser—"Giovanni Bausan."
- Torpedo-cruiser—"Tripoli."
- Torpedo-boat Flotilla of 18 torpedo-boats, constituted in three divisions:—

First Division—
- Torpedo-boats Nos. 102, 104, 110, 195, 124, and 149.

Second Division—
- Torpedo-boats Nos. 148, 142, 127, 141, 117, and 157.

Third Division—
- Torpedo-boats Nos. 134, 91, 103, 139, 146, and 99.

The cistern-ship "Pagano" is also attached to the squadron, and the ram-torpedo cruiser "Elba" is at the disposal of the Duke of Genoa for special service. The staff of assistant umpires is to be embarked on board the torpedo-school ship "Trinacria," and two auxiliary cruisers from the Genera Navigation Company's fleet are also to be attached to the squadron. The base of the 1st Division with the first and second Division of torpedo-boats is at Vado, while the 2nd Division with the third torpedo-boat Division has its base at Cagliari. The cruisers, assisted by torpedo-boats, will watch a line drawn between Cape Corso, the northern point of Corsica, Capraia Island, and Cape Piombino on the mainland.

The attacking force is composed of the Manœuvre Squadron, which was constituted on the 21st July, under the command of Vice-Admiral Morin, who has Captain Cravoisio as his Chief of the Staff, as follows:—

First Division—
Battle-ships—"Re Umberto" (flag-ship of Commander-in-Chief), "Lepanto."
Torpedo-ram cruiser—"Fieramosca."
Torpedo-cruiser—"Calatafimi."
Second Division—
Battle-ships—"Italia" (flag-ship of Rear-Admiral Gonsalez, Captain Annovazzi, Chief of the Staff), "Ruggiero d' Lauria."
Torpedo-ram cruiser—"Stromboli."
Torpedo-cruiser—"Euridice."
Torpedo-boat Flotilla of five torpedo-avisos, and eleven torpedo-boats constituted in three Divisions:—
First Division—
Torpedo-avisos—"Nibbio," "Avoltoio," "Aguila," "Sparviero," "Falco.'
Second Division—
Torpedo-boats—Nos. 101, 153, 100, 64, and 150.
Third Division—
Torpedo-boats—Nos. 115, 66, 112, 83, 133, and 135.

At the outbreak of hostilities, the 1st Division of the attacking force will be stationed some thirty miles from San Benigno, while the 2nd Division will be some twenty miles to the S.E. of Giglio Island.—*Italia Marinara* and *L'Esercito Italiano.*

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The Minister of Marine has directed that for the future all torpedo-boats under 120 tons are to be counted as second-class boats, instead of under 100 tons as has been the case up to the present.

In view of the increasing importance of Maddalena as a basis for defensive naval operations, a vice-admiral is in future to be appointed Commandant.

A curious accident, which might have had serious consequences, occurred at Spezzia a few weeks ago. The old iron-clad "Roma" used as a hulk at that port was struck by lightning during a heavy storm and set on fire; it was found impossible to subdue the flames, and as the "Palestro," another old ship, used as a floating magazine, was moored in dangerous proximity to the burning ship, it was determined to sink the "Roma," which was effected by firing two torpedoes at her bottom.

The plans for the new first-class cruiser have now been drawn. Her dimensions will be as follows:—Length between perpendiculars, 420 feet; beam, 65·6 feet; displacement, 10,000 tons. She will be the longest ship yet built for the Italian Navy, and, with a view to her being able to pass through the Suez Canal, her mean draught will be 23 feet 6 inches. The engines are to develop 18,000-I.H.P., giving a speed of 23 knots with forced draught. A second cruiser of 1,100 tons has been designed by M. Soliani Nabor; she will be of the modified "Arethusa" type, and her dimensions will be as follows:—Length, 275 feet 6 inches; beam, 24 feet 6 inches; and her engines are to develop 7,000-I.H.P., giving a speed of 22 knots. —*Mittheilungen aus dem Gebiete des Seewesens.*

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The "Andrea Doria," which forms the frontispiece of the JOURNAL this month, is a first-class battle-ship, and has two sisters, the "Francesco Morosini" and the "Ruggiero di Lauria." The dimensions of these ships are as follows:—Length, 328 feet; beam, 65 feet 4 inches; mean draught, 26 feet; with a displacement of 10,200 tons. The engines develop 10,000-I.H.P., giving a speed of 16 knots. Protection is afforded by a central armoured citadel about 150 feet in length and covered with 18-inch compound armour; above this is a smaller citadel similarly armoured, at each end of which are mounted *en barbette* two 105-ton Armstrong B.L. guns; the secondary armament is very small, consisting only of two 6-inch Q.F. guns, four 4·7 Q.F. guns, and thirty 3-pounder and 1-pounder Q.F. guns; there are also five torpedo-tubes, two of which are submerged. The armoured deck is 3 inches thick.

PORTUGAL.—The second-class cruiser "Adamastor" was launched from the yard of Orlando Bros., Livorno, on 22nd July last, she having been laid down in June of last year. Her hull is entirely of steel, sub-divided by numerous water-tight bulkheads, and her principal dimensions are as follows:—Length between perpendiculars, 73·81 metres (about 243½ feet), maximum 79·10 metres (261 feet); extreme beam, 10·732 metres (about 35½ feet); mean draught, 4·28 metres (14 feet); displacement at her trial draught, 1,750 tons. She will have two triple-expansion engines, with a total power of 3,000-H.P. natural draught, and 4,000-H.P. under forced draught. The boilers are of the double-fronted cylindrical type, and the estimated speed of the ship is 16½ knots with natural, and 18 knots with forced draught. The armament will be composed of two 150-millimetre (6-inch) guns, placed forward and aft; four 105-millimetre (4-inch) Q.F. guns on sponsons on the broadside; with Nordenfeldts in the tops, bridges, etc.; three torpedo-tubes, one stem submerged, and two broadside revolving.

This cruiser was ordered of the Bros. Orlando, by the national subscription for the defence of the country instituted at Lisbon, as a result of a competition in which several of the principal private building yards of Europe took part. The designs of hull and machinery are by the Bros. Orlando, who, besides being the owners, are also the constructors and engineers of their works.—*Rivista Marittima.*

The construction of another crusier and two gun-boats have been entrusted to the Thames Iron Works Company. Two stern-wheel gun-boats for service at Lorenzo Marques have been forwarded to that port in sections by Messrs. Yarrow & Co. They are similar in design to the English stern-wheel gun-boats on the Zambesi.—*Mittheilungen aus dem Gebiete des Seewesens.*

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RUSSIA.—Admiral Tchikhatcheff, Minister of Marine, has resigned his appointment, and with Admiral Kremer, late Chief of the General Staff, has been appointed a Member of the Council of the Empire. Vice-Admiral Tyrtoff, at present commanding the Russian Squadron in the Pacific, becomes Minister of Marine, and Rear-Admiral Avelan, now commanding a division in the Baltic, is appointed Chief of the Staff at the Ministry of Marine. Rear-Admiral Walrond is appointed Port-Admiral at Sebastopol, in succession to Rear-Admiral Lavroff, who is appointed second-in-command of the Black Sea Fleet, and Rear-Admiral Bezoire succeeds Rear-Admiral Tchaikofsky as Chief of the Staff of the same Squadron.

The attempt to transport a torpedo-boat by rail from St. Petersburg to Sebastopol having been successful, it is now contemplated to send several more to strengthen the Black Sea Fleet by the same route. The torpedo-boat destroyer building in the Creyton yard at Abö is to be named the "Abrek." The two new cruisers building at St. Petersburg are to be named the "Pallada" and "Diana." Orders have been given to the Admiralty works at Ishora to build three destroyers of the "Sokol" type; the "Sokol," it may be remembered, was lately constructed by Messrs. Yarrow for the Russian Government, and on her trials attained a speed of 31 knots. A new torpedo-gunboat, called the "Bakan," has also been laid down at St. Petersburg. Three more cruisers of the "Kherson" type have been ordered for the Volunteer Fleet.

Rear-Admiral Alexieff has assumed the command of the vessels destined to strengthen the Black Sea Fleet, which are the second-class battle-ships "Imperator Alexander II." and "Navarin," with the torpedo-cruiser "Posadnik" and two first-class torpedo-boats. Some new regulations have been issued relative to the crews serving on board the vessels of the Volunteer Fleet, and those of the Black Sea Steam Navigation Company. Before joining these ships the men are to have a special course of training in the Regular Fleet, and, after five years' service in the Volunteer Fleet, they are to serve for a further period of two years in the Black Sea Fleet. The new regulations are to

come into force gradually, and this year 200 men from the Volunteer Fleet and 120 from the other company are to commence their training.—*Moniteur de la Flotte.*

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UNITED STATES.—After the Board of Inspection and Survey had completed its examination of the new battle-ship "Indiana" it made experiments with the 13-inch and 8-inch guns, to determine the effect of the blast. The Board reports that "the forward 13-inch guns were trained right ahead, all peepholes in both sighting hoods being allowed to remain open. Lieut.-Commander Schroeder was stationed in the auxiliary sighting hood and Commander Bradford in the central hood. The 8-inch guns in the port forward turret were employed for this firing.

At the first fire one of the 8-inch guns was trained 50° forward of the beam. In the auxiliary hood the observer experienced a stinging blow on the upper part of the face and eyes as if fine particles of solid matter had been driven in by a violent inrush of air through the sighting hole, which the observer was facing. It was the observer's opinion that several fires at that train might have been sustained without material injury, but that firing at a slightly greater train would render it impossible to occupy the hood efficiently. It was not worth while to run the risk of any injury, and the observer in this hood was accordingly withdrawn.

The train of the 8-inch gun in the second fire was 60° forward of the beam. The observer's eye was at the telescope in the central hood. He felt a blast of air on the left side of his face and the back of his neck. The sensation in the face and eyes was as if fine sand had been violently thrown into them. In the third shot, with a train of 65° forward of the beam, the same sensations as before were experienced. The shock interfered slightly with the sighting of the 13-inch guns. In the fourth round, with a train of 70° forward of the beam, the shock was more severe and closed the eyepiece of the telescope. No injury was suffered by the observer, although the sensation in the eyes and face was more severe than before. In the fifth fire the gun was trained 80° forward of the beam. The blast was more severe than before, and more from the front. The observer was of the opinion that a person could not do any work in the hood with a more severe shock, especially such delicate work as sighting and firing a gun, but he doubted that any material physical injury would be experienced at a train of 85°.

In the conning tower, with all peepholes open, the sensation was that of a strong blast through the port peepholes, becoming more severe as the gun was trained forward. There was no shock, but in the opinion of the observers a person looking out of the peepholes toward the 8-inch gun, his eyes close to them, would suffer material injury when the nearest 8-inch gun was fired at a train of more than 70° forward of the beam. The conning tower would probably be tenable for an observer in its centre, not looking toward the gun, while the nearest 8-inch gun was being fired right ahead.

Both starboard 8-inch guns, one at a time, were fired at a level over the central sighting hood of the after 13-inch turret. At the first fire a shutter of the scuttle was lifted and flame entered the turret. The glass in the peepholes of the auxiliary sighting hood nearest the gun was shattered and fell in. In the second fire the same results were obtained. An observer in either sighting hood would have been disabled, if not fatally injured.

The 13-inch guns were also fired right aft and level. As a result of the blast following upon the charge of 470 lbs. of powder the battle-plate over the port ward-room companionway immediately under the muzzle of the gun was dished 5 inches. No material damage was suffered. In the second fire from the gun in the after 13-inch turret at the extreme train forward on the starboard side the shock in the superstructure was very severe. Light articles were knocked about by the blast, the men were thrown off their balance, and if men had been stationed at the after

6-inch gun they would probably have been seriously injured, if not killed. Some minor damage followed the third round, a hatch bar being broken in three pieces."

The report says that the auxiliary sighting hoods for the 13-inch guns cannot be efficiently occupied when the nearest 8-inch gun is fired at a greater train than 53° forward or abaft the beam. The Inspection Board suggested that in place of the auxiliary sighting hood a training station be installed close to, and, if possible, immediately in front of the central hood, so that the officer in the latter could communicate freely with the training station. If it is practicable to make this change in the "Indiana," the Board recommended that a large speaking tube with flaring mouth be installed between the two hoods, and the peepholes of the auxiliary hoods be closed.

The Board also reported that the 13-inch central sighting hoods could not be efficiently occupied when the 8-inch guns were fired at a greater train than 80° forward or abaft the beam. It recommended that stops be placed on the 8-inch turrets to avoid a greater train. Another recommendation was that people stationed in the 13-inch sighting hoods and in the conning tower shall place cotton in their ears and shall be supplied with mica goggles to prevent injury to their eyes from the blast of the 8-inch guns when fired at extreme train.

"The positions of the 6-inch guns," says the report, "are untenable and dangerous when the nearest 13-inch guns are fired at extreme train. It is recommended to sacrifice the fore and aft fire of the 6-inch guns and close their ports in that direction. Incidentally, this would permit in future construction placing the 8-inch turrets further from the middle line. With heavier battle hatches on the main deck and the 6-inch ports closed to fore and aft fire, it is the opinion of the Board that the 13-inch guns can be fired without injury at level and throughout their entire arcs of train."

An interesting practical test in connection with double turrets will take place shortly at the Indian Head Proving Ground. The ordnance authorities are anxious to ascertain the effect of the blast of the 8-inch gun located in the super-turrets upon the men looking out of the sighting hoods of the 13-inch turrets. There are three sighting hoods in each of the 13-inch turrets, one in front, and two located on each side of the centre. Three sighting hoods are necessary, in order that a good view of the horizon may be obtained. Since the "Indiana's" test, when her 8-inch guns were fired across the 13-inch turrets, the authorities have been wondering what the effect would be in the case of double turrets. The officers at the proving ground have been directed to place a sighting hood with a top plate 3 inches thick under an 8-inch gun, and some distance in the rear of the muzzle—in fact, to simulate as closely as possible the condition existing when the superposed turrets are built. One of the officers will then be stationed in the hood and the gun fired, and the effect of the blast will thus be described to the satisfaction of the ordnance officials. It is stated that there is absolutely no chance of an officer receiving injury of a severe extent as a result of firing.—*Army and Navy Journal.*

The House Committee on Naval Affairs has finally practically completed the Naval Appropriation Bill. While the measure does not come fully up to the hopes of the service in that it provides for but four new battle-ships instead of six, as had been proposed, it is a good bill and takes a long step in the direction of providing for a Navy of sufficient strength to defend the United States in case of war. The advocates of six ships made a hard fight, but were finally forced to yield, the argument against this number being that the condition of the Treasury would not admit of so large a programme at this time. A great deal of pressure was exerted by Republican leaders outside of the committee to keep the number down.

The bill will carry a total appropriation of about $31,911,000, of which $3,256,250 will be to commence the new battle-ships and torpedo-boats provided for in the bill. The total carried by the bill is about $3,000,000 more than last year's bill.

The cost of each new battle-ship is limited to $3,750,000, and only $500,000 is to be expended on each of them during the next fiscal year, of $2,000,000 in all. The contract price of the five first-class torpedo-boats is not to exceed $175,000, and the sum which can be spent on all of them between now and July 1st, 1897, by the Navy Department is limited to $656,250. The cost of the ten second-class torpedo-boats is fixed at $80,000 each, and for the whole number only $600,000 can be drawn upon in the next fiscal year.

Three new dry docks capable of accommodating the largest battle-ships are provided for—one at Algiers, La., to cost $800,000; one at Mare Island, Cal., and another at Portsmouth, N. H., each to cost $575,000. For the next fiscal year $100,000 is appropriated for each dock. Following are some of the most important appropriations under the head of Ordnance:—

Reserve supply of guns, $250,000; reserve supply of projectiles, $200,000; additional torpedoes, $142,000; modern guns for auxiliary cruisers, $250,000.

Under the head of steam engineering are the following special provisions:—New machinery for "Chicago," $150,000; for "Atlanta," $150,000; new boilers for "Dolphin," $60,000; new engines and boilers for "Hartford," $75,000. The appropriations for the "Atlanta" and "Dolphin" are made immediately available. In this department there is also made immediately available $30,000 for new boiler tubes for the "New York," "Columbia" and "Minneapolis."

The authorised enlisted strength of the Navy is increased by giving the Secretary authority to enlist 1,000 additional men. The Marine Corps is increased by the addition of 10 sergeants, 40 corporals, 12 drummers, 12 fifers, and 426 privates.

A model tank for testing models of hulls is to be erected in the grounds of the old Naval Observatory, at a cost of $7,500. As a special emergency provision under "Construction and Repair," is the following:—For repair and other work urgently required during the present fiscal year, on the "Miantonomoh," "Bennington," "Baltimore," "Petrel," "Mohican," "Ranger," "Atlanta," "Vesuvius," tugs "Fortune" and "Standish," to strip the "Pensacola" and "Swatara," ordered to be sold; for boats and steam cutters, docking and painting ships; supplies needed for Navy yards; stores and supplies for ships, fitting out and in commission, and miscellaneous work authorised on vessels but deferred for lack of funds, $350,000 to be immediately available.—*Army and Navy Journal.*

## MILITARY NOTES.

HOME.—The valise equipments in use in the Austrian, French, German, and Japanese Armies, which, by the courtesy of the respective Governments have recently been exhibited in the Royal United Service Institution, have been lent by the Council to the Aldershot Military Society for a month. There are, doubtless, good points in the French, German, and Japanese systems, but few that could be utilised to meet the requirements of the British Army. Including the "Slade-Wallace," which is the present regulation equipment of the Foot Guards and Infantry of the Line, there are four patterns now on trial in the British Army. Though it has many obvious good points, the objections made to the "Slade-Wallace" equipment, which was introduced about 1884, are that, unless the pouches are filled with ammunition, it does not balance, and to counteract this fault the waist-belt has to be so tight as to seriously interfere with the comfort of the soldier. Its weight is considerable in proportion to the amount of kit which it carries; it is somewhat complicated in construction, and occupies considerable time in cleaning; the ammunition cannot be carried conveniently without the kit to balance, any more than the latter can be conveniently carried without the ammunition, and in doubling it is most uncomfortable.

About fifteen years ago the present Deputy Surgeon-General W. S. Oliver introduced an equipment which was tried in the 52nd Light Infantry and 1st Battalion Rifle Brigade, but it was unfavourably reported on and discarded. The same officer has an improvement on that system on trial now, and it is reported that it is likely to be adopted by the Canadian Government for the Militia of the Dominion.

The "Rose and Gilbert-Cooper" equipment is the invention of Deputy-Surgeon-General H. J. Rose, of the School of Musketry, Hythe, and Captain W. Gilbert-Cooper, 2nd Battalion East Surrey Regiment. It is founded (1) on a skeleton back-frame made in metal of aluminium-alloy, covered with leather, which is adapted to carry the canteen, greatcoat, and valise, each independently of the other two, and (2) on the means of adjustment used to balance it. The balance of the frame, when in position on the back, is controlled by the adjustment of the braces and the stay-strap worn in front of the body, so that, if more weight is required to be carried on the shoulders than the lower part of the back, all that is necessary will be to let-out or loosen the stay-strap, and in a case *vice versâ* to tighten its adjustment. It is claimed for it that by this means the balance of the equipment is easily regulated, is not in any single way dependent on ammunition being carried, and is absolutely free of the waistbelt. Hitherto, in nearly every other design of equipment, there has been a dragging up of the waist-belt, and also a considerable drag on the shoulders cramping the chest, which must and does very naturally impede the perfectly free use of the arms and shoulders of the wearer. These serious and important faults have, it is claimed, been quite overcome in this particular design. Moreover, the canteen, greatcoat, and valise, are each kept perfectly rigid on the back, with every available opportunity allowed and given for sufficient ventilation. To remove the equipment, the wearer has to undo *one buckle* of the stay-strap adjustment, and the whole thing can be slipped off the shoulders *in a moment* and *independently* of the *waistbelt*. This is a very great and important advantage during a march, or any manœuvres, and especially on active service. Again, the valise, greatcoat, and canteen, each having an independent adjustment, can be detached very speedily, if this should at any time be desired. There is an extra pouch, made detachable by the simplest means from the stay-strap, which is *optional* for use and can be dispensed with altogether without making any difference at all to the balance of the equipment. It is only intended for the carriage of *extra* rounds of ammunition issued on active service. This is the equipment as described by its inventors; its defects have yet to be pointed out.

Another equipment now on trial, and one which is spoken highly of, is the "Barrett," the invention of Major-General R. D. Barrett, late 2nd Battalion Yorkshire Regiment. This officer, it will be remembered, introduced a pattern of valise in 1882. It was tried in the Army, but was discarded in the Foot Guards and Line in favour of the "Slade-Wallace." In the Royal Artillery, Royal Engineers, Army Service Corps, Medical Staff Corps, a few Line battalions, and the Militia, it is, however, in use to this day; and were a diminution made in the number of straps and buckles it would probably hold its own with many more recent attempts. Major-General Barrett claims to have invented an improved pattern, which is now on trial at Aldershot, Colchester, and elsewhere, but it has yet to be pronounced upon. What the Army wants, in the form of equipment, is one that will be independent of whether ammunition is carried or not. It should be such that under all circumstances the waistbelt can be worn loose. The kit should balance of itself without ammunition, or when the latter is in the pouches an alteration in the lengths of certain straps should enable the soldier to make the ammunition counter-balance the kit without difficulty or delay. Lastly, the issue of extra cartridges immediately before going into action should be provided against, so as to prevent the additional weight from upsetting the previous arrangements for distributing the burden. The first step towards what is needed is to substitute strong web for the buff

leather, so that the latter should be retained for waistbelts only. This would solve two difficulties, weight and heat. Buff leather braces are very hot things to wear, as the state of the kersey frocks after a march will amply testify. It is urged against web that it does not wear so well as buff leather. This is quite true, but upon the other hand the web would cost less than one-fourth of the money. It is understood that the straps of Major-General Barrett's new valise equipment are of web; the waistbelt alone being of buff.

It is necessary, therefore, to start with this: that the equipment itself should be of web in order to make it light, and so constructed that it shall be comfortable under all circumstances. The soldier should be able to wear his greatcoat and yet carry his pack and cape without inconvenience. Similarly he should be able to carry his greatcoat alone with equal comfort, quite irrespectively of the fact that the other things are not on his back. In other words, no equipment can be satisfactory which is only comfortable when the entire maximum load is being carried, and this is one of the great objections raised against the present pattern.

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The boots worn in the Austrian, French, German, and Japanese Armies have been subjected to the criticism of British experts, who consider that none of them can be said to be equal to the British military boot, notwithstanding its defects. The Austro-Hungarian boot is evidently a very cheap article. The material is inferior, and it is machine sewn. It has a false inside sole, which is very faulty, and liable to wrinkle with the heat of the foot. If it has any redeeming quality it is in the lower lacing, as is found in the boots of English agricultural labourers, and which gives great support to the foot. The French boot is not equal to the English, and there is nothing to learn from it except the broader toes, higher quarters, and the lower lacing. The nails, which are made of wrought nugget, are good. The German boot is much like the English officers' Wellington boot, and, according to all British ideas, quite unsuitable either for military or civilian purposes. The toes are broad, the uppers and legs are good, and the same may be said of the wrought flat hob-nail, but the heel is too small, and the boot is not suitable for walking. The whole make-up is inferior, and evidently produced as cheaply as possible. The Japanese soldiers wear shoes and white spats. Their shoes are made on an excellent principle, and are very suitable for a dry climate. They are made of good material, their shape is good, and so are the heels and nails.

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AUSTRIA-HUNGARY.—The employment of cyclists in this year's manœuvres has been so arranged that one officer and four under-officers or soldiers will be attached to each army corps, three under-officers to each division, and one under-officer to each brigade. If more cyclists be available, three or four under-officers will be attached to each infantry battalion and one to detached battalions. These duties will be carried out by reservists if their numbers be sufficient, but if not, men of the active army will also be employed. Those who possess machines and come forward voluntarily will be eligible, with the exception of cadets and one-year volunteers.

An allowance of 50 francs will be made to each cyclist who, with his machine, serves at least ten days in the manœuvres, and of 5 francs a day for the short manœuvres, besides compensation for any serious damage done to cycles on service. The dress and equipment, with the exception of necessary modifications, are the same as for other soldiers. Cyclists must, when the troops are in field order, carry the cloak, canvas sheet, and essentials out of the knapsack, the latter as well as the cartridge-pouch being carried for them in wagons. The cyclist must also carry on his person a water-bottle, emergency ration, despatch bag, and a revolver instead of a rifle. The officers have the sword attached to the machine, and wear the scarf over the shoulder. The services of the cyclists will be reported upon after the manœuvres.—*Militär-Zeitung.*

By a recent order the Hungarian Crown, and national insignia, have been confided to the keeping of a Body Guard drawn from the Landwehr, whose duty it will be to protect and defend them both in peace and war. This corps is styled "The Royal Hungarian Crown Guard." It may also be called to do duty on occasions of Court ceremonial, or at great military or religious functions. The corps consists of a captain, a lieutenant, and forty rank and file, in addition to the necessary under-officers, buglers, and officers' servants. No man will be accepted unless he is smart, strong, well set-up, well conducted, a good height, can read and write, has served at least two years, and can speak Hungarian. Those who have served longer and can speak more languages will have the preference. Men who have attained the rank of sergeant-major in the Landwehr will retain it. All must engage for four years.—*Militär-Zeitung.*

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The programme of the manœuvres in Galicia includes the construction of a field railway by the attacker, from Kadymno to Trojezyce and thence to certain artillery positions. Captive balloon stations and observatories are also established, by both attacker and defender, and the latter is completing a telephonic and telegraphic system.

The Schools lately established for field and garrison artillery at Totis and Steinfeld respectively have each had their staff of instructors appointed as follows:—1 commandant, 1 adjutant, 1 field-officer, 3 officers, and 1 artillery engineer; also 3 non-commissioned officers and 2 men are appointed as clerks. In the Field Artillery School all those captains and 1st lieutenants who attended a corps school in 1895-96 were called in to attend during the first period. All captains of field and mountain artillery who passed a special course in 1895, and the second-year students of the "higher artillery course," attend during the period which ends on September 16th. Analogous arrangements are made for officers of the garrison branch.—*Deutsche Heeres-Zeitung.*

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FRANCE.—The newly-established company of the 87th Regiment of Infantry is to be supplied with 120 folding cycles, and placed under the command of Captain Gerard, the inventor. It is stated that on the road to the manœuvres of the 12th and 17th Army Corps, this company will carry only the carbine, pouch, and haversack, with a cold ration, the baggage being sent on by rail to the stations where they halt for the night. Regulations for the guidance of cyclists are about to be issued.—*Le Progrès Militaire.*

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The Alpine Troops have now taken up the positions on the frontier of Savoy, where they will remain till the 1st November. Four groups are formed there, each consisting of a battalion and a mountain battery. The first occupies the district from St. Bernhard to Iséran, the second from Col de Caseigne to Little St. Bernhard, the third from Iséran to Mont Cénis, and the fourth from Mont Cénis to Mont Thabor. The headquarters of the isolated groups are Annecy and Albertville, and of the two last-named groups Chambéry.—*Le Progès Militaire.*

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Of the 108 generals of division now serving in the French Army, 2 came from the former general staff corps, 52 from the infantry, 22 from the cavalry, 21 from the artillery, and 11 from the engineers. Of the 214 brigadiers, 101 are from the infantry, 47 from the cavalry, 40 from the artillery, 20 from the engineers, and 6 from the gendarmery.—*Militär-Wochenblatt.*

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The training of the foot artillery at the camp of Châlons is to continue for a month, and will serve a double purpose. It will not only teach the troops the service of heavy guns of 120, 138, and 155 millimetres, and the mortar of 220 m.m., which throws a projectile of from 120 to 200 kilogrammes, but will make them acquainted with

the latest alterations. They will also be practised in all those exercises which would have to be performed in the attack or defence of a place of strength, including the use of a narrow-gauge railway. Seven battalions have been assembled to undergo training, of which thirty companies are on a war footing.—*Le Progrès Militaire.*

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The French grand manœuvres, in which the 12th and 17th Army Corps are engaged, are under the direction of General Caillot, a member of the Superior Council of War. The General was born at Strasburg, in February, 1833, became General of Division in 1885, and Grand Officer of the Legion of Honour in 1893. His chief of the staff is General Langlois. The 12th Army Corps, commanded by General Poilloüe de Saint-Mars, consists of the 23rd Infantry Division, General Lesmaisons (made up of the 45th Brigade, General du Chouchet; and the 46th, General Altmayer), with five companies of engineers, and the 24th Infantry Division, General Guiott (made up of the 47th Brigade, General Graff; and the 48th Brigade, General Brunet), with the 23rd and 24th Divisions of Artillery, under General de Boysson, and the 12th Brigade of Cavalry, under General de Gérardin.

The 17th Army Corps, commanded by General Fabre, consists of the 33rd Infantry Division, General Vincendon (made up of the 65th Brigade, General Duprat de Laroguette; and the 66th Brigade, General Dessirier), and the 34th Infantry Division, General Mothas d'Hestreux (made up of the 67th Brigade, General Fabre; and the 68th, General Gay de Taradel), with the 23rd and 24th Divisions of Artillery, General Bourjat, and Corps Artillery; also the 17th Cavalry Brigade, General de Bellegarde. In addition to the above, each army corps includes a mixed division.

On the 11th September, the 17th Corps was to attack the 12th Corps; on the next day the converse was to take place; on the 13th, a rest day; on the 14th, the attack by army on marked enemy, the 17th Corps making a frontal and the 12th a flank attack; on the 15th, manœuvres of an army against a marked enemy; after which all are to get ready for the review to be held on the 17th by the President of the Republic and the War Minister, on the plain to the north of Châteauneuf.

The Alpine manœuvres of the French Army commenced on the 26th August, at Barcelonnette, under the direction of General Zédé, Governor of Lyons, and Commander of the 14th Army Corps. They were followed, with much interest by large numbers of officers and civilians, it being expected that they will tend to decide whether the entrenched camp of Tournoux requires to be strengthened, and whether that part of the frontier is adequately defended. The question is a delicate one, owing to Italy's relation to it, and is therefore not very freely discussed by military correspondents.

The effective of the troops employed was small, namely, the 53rd Infantry Brigade, the 6th and 7th Alpine Groups, which are the 14th and 30th Battalions, with administrative and telegraphic sections. The duty was most arduous, the region inhospitable, and the heat described as having been "torrid." It appears that the difficulties of communication and transport were very great, and that in the event of real war, they would have to be met by much more effective measures than have yet been adopted.—*Le Temps.*

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GERMANY.—A paragraph relating to the training of Reserve horses in the Austrian Army was inadvertently inserted under this head last month.

The headquarters of the 1st Inspection of the German Army, at present in Hanover, will be transferred to Berlin on the 1st October. The nineteen army corps of the line are comprised in five inspections, the first of which, under Prince Albert of Prussia, includes the 1st, 2nd, 9th, 10th, and 17th Corps.—*Revue du Cercle Militaire.*

There are usually thirty war-dogs of various breeds in training with the Jäger Guard Battalion at Potsdam. Their education begins by their being led about by patrols, and afterwards they are allowed to run loose in company with the soldiers. Later, they are trained to carry despatches back to the place whence they started, and they soon come to understand that they are being entrusted with an important duty. The despatch takes the form of a note which exactly fits under the brass plate of the dog's collar. When the note is being fixed in its place the dog is with difficulty held back, and the moment he is set free he bounds away, and does not stop till his message is delivered. It is more difficult to teach him to find the patrol again on his return, if the position has been changed, but the training advances by degrees. After learning how to make reports, the dog is taught to search for the wounded, and to bring back a cap or a piece of the uniform belonging to the wounded man. He is also taught to carry ammunition to the fighting line. The most difficult lesson of all is the mute search for the enemy. The exercises should not be overdone, as hours of rushing to and fro will damp the zeal of the most willing dog.—*Militär-Zeitung.*

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A new set of regulations has been issued with regard to the uniform of officers in the Prussian Army. Of recent years the necessity for considerable changes has been more and more recognised, and during the last year they have been experimentally made by means of selected bodies of officers throughout the Army. The general effect of the new regulations will be to simplify and improve the arrangements connected with the dress of officers. For instance, a girdle will now be worn on service, instead of the sash which has hitherto been part of the officer's uniform; and infantry lieutenants are no longer to wear pantaloons and high boots as a parade dress. Most of the changes are of small interest to those not immediately concerned, but they mark a new departure wherein some of the old Prussian rules are modified, and practical utility is combined with an increase of smartness.—*Deutsche Heeres-Zeitung.*

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The Emperor's manœuvres in Silesia were ordered to begin on the 10th September in the Gorlitz and Bautzen country. The Emperor assumes the duty of Umpire-in-Chief, but on the days when His Majesty takes command in person Field-Marshal Prince Albert of Prussia is to act in that capacity. General Count Schlieffen is Chief of the General Staff.

The East Army, under the command of General Count Waldersee, consists of the 5th and 6th Army Corps. The 5th Army Corps is commanded by General von Seeckt, and the 6th by the Hereditary Prince of Saxe-Meiningen. The West Army, under the command of Field-Marshal Prince George of Saxony, consists of the 12th Saxon Army Corps and one composed of the 3rd Saxon Division combined with the 8th Prussian Division. The 12th Saxon Army Corps is commanded by Lieut.-General Baron von Hodenberg, and the combined corps by General von Hänisch.

The manœuvres of the cavalry division at Hainau have been watched by many thousands of spectators, who had a good view of the troops from the neighbouring high ground. The object of the operations was to ascertain how far artillery could assist cavalry in the offensive, and, secondly, what chance of success there might be for an attack by cavalry against artillery. The result, it is said, proved that, notwithstanding smokeless powder and new rifles, the cavalry attack will be effective if duly covered and supported by artillery. With regard to the attack by cavalry against artillery, it was concluded that, although not entirely out of the question, it would involve great sacrifices.—*Neue Preussische Kreuz Zeitung.*

ITALY.—The following is the arrangement that was made for the great cavalry manœuvres on the plain of Pordenone from the 1st to the 12th August. The troops to be present were the 4th Cavalry Brigade—the Genoa Regiment No. 4 with six squadrons, and the Lucca Regiment No. 16 with five squadrons; the 5th Cavalry Brigade—the Savoy Regiment No. 3 with six squadrons, and the Lodi Regiment No. 15 with five squadrons; a horse artillery battery to be attached to each brigade. The first week was to be devoted to the exercise of regiment against regiment of the same brigades; from the 8th to the 11th inclusive, brigade to manœuvre against brigade; on the 12th, the whole to be taken over by the general commanding the army corps, to be led against a marked enemy and then reviewed.—*L'Esercito Italiano.*

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The Roman manœuvres were held from the 1st to the 22nd August, the 9th Army Corps being engaged. The two divisions, owing to their weak peace establishment, were formed into one, and the battalions consisted of three companies each. This latter arrangement was made in accordance with M. Ricotti's intention to have all battalions composed of three companies, M. Pelloux, the present War Minister, being desirous of giving a trial to his predecessor's plan. The report on these manœuvres is eagerly awaited, to see whether it is likely to be successful in practice. In some garrisons, such as Turin, the Communal Militia was called out for guard duty, to free the Regular troops for attendance at the manœuvres. The Communal Militia is composed of soldiers of all categories, who have formerly served in the Army.—*Deutsche Heeres-Zeitung.*

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According to the last report published, the Italian Red Cross Society has 293 sub-committees and 2,990 members. Its executive consists of 870 officers and 1,841 under-officers, corporals, and soldiers. It possesses eight hospitals of 100 beds, thirty-six field hospitals of fifty beds, and arrangements are specially made in preparation for Alpine warfare. This society rendered great service during the last campaign in Africa, having, at its own cost, sent out ten ambulances to Erythrea, with fourteen surgeons and all the necessary staff, none of whom were protected by the Geneva Convention.—*Revue du Cercle Militaire.*

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PERSIA.—The Persian Army is very little known, but in the event of Asiatic complications it might be called on to play a not inconsiderable part. There is no War Minister in Persia. A son of the late Shah had the duty of looking after the Army, but not in accordance with any fixed plan, and with no help but that of an ordinary clerk.

The infantry consists of eighty battalions of 1,000 men each, of whom hardly half are with the colours. The others are on leave, although ostensibly present, and this opens a wide door for deception and fraud. The troops are armed with old Prussian percussion rifles. There are also in store 65,000 Austrian Werndl rifles, but as they are not kept in repair they would, probably, be of little use. There is, as a rule, no target practice, and the cartridges used by those who wish to keep up their shooting are always of the fewest. The cavalry is numerically strong, because Persia possesses, probably, 100,000 horsemen, but they resemble highwaymen rather than soldiers. They are constantly on leave, and receive nothing from the State; their weapons, also, are of all patterns. The artillery comprises twenty battalions of 250 men, of whom the half are on leave. They have about 100 Austrian Uchatius guns of a calibre of 7, 8, and 9 centimetres, and some 1,000 old smoothbores.

The clothing and equipment stores are almost empty, and there is neither administrative organisation, sanitary service, nor means of transport. Several foreign officers are to be found in the service of Persia, among whom are some from Prussia and Austria.—*Deutsche Heeres-Zeitung.*

PORTUGAL.—The Portuguese artillery had, till recently, only 1 brigade of mountain artillery, composed of 2 active batteries of 8 guns, and 4 depôt batteries. This brigade has lately been transformed into 2 brigades, each having 2 active batteries of 6 guns, and 2 depôt batteries. The Portuguese artillery now consists of 3 regiments of field, 2 of fortress, and 2 brigades of mountain artillery, together with 4 independent fortress artillery companies. In peace each field regiment has 10 active and 2 depôt batteries. Each fortress regiment has 8 active and 4 depôt companies. Of the 10 active batteries of the 1st Regiment, 2 are horse. The guns are steel, 8 and 9 centimetres, and the mountain guns are 7 centimetres. The Director-General of the Artillery commands the force and directs the manufacturing establishments.—*Militär-Wochenblatt.*

ROUMANIA.—Arrangements have been completed for the establishment of a system of military education in Roumania. Of the several classes of schools included, the first is that of the Cadre Schools in Bistritz and Fokshany, in which corporals are prepared for advancement to under-officers, the course lasting from six to nine months. The second is the Under-officers' Preparatory School in Bistritz, for qualifying under-officers to enter the Officers' School. The course lasts one year. The third is the School for Soldiers' Sons. The fourth is the Officers' School in Bucharest, for cavalry and infantry, the curriculum of which is of two years' duration. The others are, fifth, the School of Military Administration; sixth, the School of Cavalry, for the improvement of officers in practical work; seventh, the Artillery and Engineer School; and eighth, the Higher War School, with a course of two years, to prepare officers for the General Staff.—*Militär-Wochenblatt.*

RUSSIA.—The summer drills of the Russian Army are carried out in 1896, as in former years, under a definite plan, both in the European and Asiatic parts of the empire. The commencement and duration of the exercises are, however, not absolutely fixed, the nature of the various localities and climates having to be taken into account; but certain dates are laid down for the termination of the respective stages of the training.

The troops in the Odessa and Transcaspian districts, and some detachments in the Caucasus, are the first to commence. In the present year the soldiers of the Moscow district went into camp earlier than usual, their barracks being required for the guards on the occasion of the coronation ceremony. In the Wilna district also, an early beginning is made. Then come the Moscow and St. Petersburg artillery, who must begin their practice about the middle of April, in order to be ready for the "general assembly." The drills generally finish about the end of August, although in some cases it is about the middle of September before the work is done, as it is interrupted by the hot weather in districts like Turkestan. As a rule, they last four months; in Finland, St. Petersburg, and Moscow the period is rather shorter. The troops are supposed to go into camp on the 1st May, but that rule is subject to numerous exceptions. On that date the "partial assemblies" begin. The greatest muster of field artillery takes place at Rembertoff, where 566 guns are present in June and July; at Brest-Litovski there are 248, and at Krassnoé-Sélo 190.

At present 44 batteries, of which 6 are horse artillery of the Guard, and 1 regiment of mortars, are assembled for a period of two months (the normal duration of the schools of gunnery), at the camp of instruction at Krassnoé-Sélo. The assembly of so great a number of batteries is quite in accordance with the regulations, in which it is laid down that "practice is not only to be carried on by isolated groups, but by brigades (6 batteries), and, whenever possible, by the whole artillery of an army corps on a war footing."

The fortress artillery conduct their practice from their own fortresses, with the exception of the Kovno, Libau, Warsaw, and Dubno Artillery, which, owing

to local conditions, cannot fire from their works, and must practise at the nearest school of gunnery. Cavalry and horse artillery assemblies take place in the St. Petersburg, Wilna, Warsaw, Kieff, Odessa, Moscow, Caucasus, and Transcaspian districts, but the Cossack regiments, independent sotnias, and the Finland dragoons, do not attend. The command of the separate cavalry exercises at Krassnoé-Sélo is taken up by His Imperial Highness the Inspector-General of Cavalry.

The last four weeks of the summer drills are occupied by the general assemblies of troops of all arms. In order to make them more instructive, about two weeks are spent in "movable assemblies" so that the country is comparatively unknown, and is changed every day. There are seventy-five points at which general assemblies take place, of which twenty-eight finish as movable assemblies. It is sometimes necessary to continue the latter for three weeks as, for instance, in the Warsaw and Kieff districts where two or three army corps meet, and where consequently longer time is required, large bodies of men having to be practised in marching and fighting.

At this year's general assemblies there were present 84 per cent. of the infantry, 92 per cent. of the cavalry, and 97 per cent. of the artillery. Taking part in the movable assemblies or manœuvres were 555¾ battalions, 292½ squadrons and sotnias, and 162 batteries, amounting to 35 per cent. of the infantry, 48 per cent. of the cavalry, and 37 per cent. of the artillery.—*Militär-Zeitung.*

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A commission was appointed in 1893 to shorten and simplify the cavalry regulations, and the result of their labours has this year been approved by the Tsar. The eight handbooks of instruction formerly in use have been replaced by three, the contents of which are more in harmony with the requirements of modern tactics. The first volume deals with riding-school, troop and foot drill, saddlery and harness; the second with squadron, regimental, brigade, divisional and corps manœuvres, dismounted manœuvres, reviews, salutes and trumpet sounds; and the third with the employment of time, the instruction in crossing rivers, and shoeing.—*Revue du Cercle Militaire.*

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The commission entrusted with the duty of working out the details of a new scheme of conscription in Russia have made their recommendations. The most important of these are the following:—The period of service for ordinary recruits to be five years with the colours and thirteen in the reserve. Persons who have passed through a school of the fourth class (national school) to serve four years with the colours and fourteen in the reserve. Persons who have passed through a higher or middle-class school (of the third class) to serve three years with the colours and fourteen in the reserve. Teachers in schools of the third and fourth classes to serve one year with the colours and seventeen in the reserve. Volunteers who have passed through certain stages in the places of higher instruction, to serve one year with the colours and twelve in the reserve. One-year volunteers may have their period of army service postponed for the purpose of finishing their educational course, in ordinary cases, till they are twenty-five years of age, in others till they are twenty-seven, and in the case of special students till they are twenty-eight years of age. The statistics of the Army show that the empire is in a very backward state with regard to the education of the people.—*Militär-Zeitung.*

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TURKEY.—According to the last year-book the total number of officers in the Turkish Army was 23,930. Of these, 4,768 belong to the infantry, 1,175 to the cavalry, 1,063 to the field artillery, 328 to the garrison artillery, 187 to the engineers, 145 to the fortress engineers, 287 to the administrative troops, 68 to the firemen of Constantinople, 21 to the telegraphists, 76 to the train, 31 to the sick-bearers, 5,049 to the Redif infantry (Landwehr), 1,710 to the Unkurdish

cavalry, 475 to the general staff, 4,300 being unattached officers of all arms—in all 19,612 combatant officers. Doctors, intendance officials, and others make up the remaining 4,318.

The list contains 6,117 officers bearing the title of Aga. Colonels and lieutenant-colonels have that of Bey, and generals that of Pasha. An Army List was first published in 1872, and for some time appeared very irregularly, but since 1886 it has come out nearly every year.—*Deutsche Heeres-Zeitung.*

## NAVAL AND MILITARY CALENDAR.

### AUGUST, 1896.

1st (Sat). Volunteers went into Camp for Annual Training.
,, ,, Shoeburyness Meeting commenced.
3rd (M). The Queen and Members of the Royal Family viewed the Channel Fleet at Spithead.
4th (Tu). The Queen inspected the Fleet.
,, ,, The 2nd King's Royal Rifles arrived at the Cape.
5th (W). Lieut.-General Sir W. K. Elles, commanding Bengal Army, died at Naina Tal.
,, ,, Colonel Plumer defeated the Matabele.
7th (F). Final operations of the Volunteer week at Aldershot, under the Duke of Connaught.
,, ,, Launch from Messrs. J. and G. Thomson's Yard at Clyde Bank of torpedo-boat destroyer "Furor" for Spanish Government.
8th (Sat). Shoeburyness Meeting ended.
10th (M). Seventeen Militia battalions arrived at Aldershot for Training.
,, ,, Matoppo Impis reported as completely broken up.
11th (Tu). Military Governor of Crete recalled.
,, ,, Launch of torpedo-boat destroyer "Star" from Messrs. Palmer's Yard, Jarrow-on-Tyne.
12th (W). Attack Practice by the whole of the Infantry at Aldershot, under the Duke of Connaught.
15th (Sat). Resignation of General Bronsart von Schellendorff, Prussian War Minister.
19th (W). The sections of the new gun-boat "El Gafer" or "Victorious" arrived at Kosheh, and the work of putting her together was begun.
21st (F). Launch of new gun-boat "El Gafer" at Kosheh.
,, ,, Competition of Regimental Teams for Duke of Connaught's Shield—4th King's Royal Rifle Corps, 1st; 2nd Rifle Brigade, 2nd; and 4th Rifle Brigade, 3rd.
22nd (Sat). Launch of torpedo-boat destroyer "Recrui" from Messrs. J. and G. Thomson's Yard at Clyde Bank.
24th (M). The Officers, Non-commissioned Officers, and Men at Aldershot, who served in the Ashanti Expedition, were presented by the Duke of Connaught with the Ashanti Star.
25th (Tu). Launch from the Elswick Shipyard of the second-class cruiser "Barrozo" for the Brazilian Government.
26th (W). 9th Lancers left Aldershot for Natal.
,, ,, Launch of torpedo-boat destroyer "Whiting" from Messrs. Palmer's Shipbuilding Yard, Jarrow-on-Tyne.
27th (Th). Sultan's Palace at Zanzibar bombarded by H.M. ships "Racoon," "Sparrow," and "Thrush."
28th (F). Launch of torpedo-boat destroyer "Terror" for Spanish Government from Messrs. J. and G. Thomson's Yard at Clyde Bank.
29th (Sat). First Battle of Manœuvres fought, in presence of Lord Wolseley.
31st (M) Divisional Manœuvres at Aldershot.
,, ,, Militia Brigades' route marching.

# FOREIGN PERIODICALS.

## NAVAL.

AUSTRIA-HUNGARY.—*Mittheilungen aus dem Gebiete des Seewesens.* No. 9. Pola and Vienna: September, 1896.—"On the Fighting Value of Ships from the point of view of their Armament" (*concluded*). "Proposal for Modernising Instruction in Navigation." "A New Advance in Torpedoes." "The Austrian Naval Estimates for 1897." "H.I.M. ship 'Magnet'" with (photograph). "The Development of German War-ship Construction." "The Bazin Roller-ship." "The French Melinite Shells." "Book Notices."

DENMARK.—*Tidskrift for Sövæsen.* No. 4. Copenhagen: 1896.—"Present Opinions on the proposed Law for the Regulation of the Rule of the Road at Sea."

FRANCE.—*Revue Maritime.* Paris: August, 1896.—"A Study of Relative Movements *à propos* of an Action between two Ships." "Influence of Sea-Power on History, 1660-1783" (*concluded*). "Two Problems of Coast-Navigation." "Marine Boilers and Liquid Fuel." "The Re-organisation of the Japanese Fleet and the Italian Ship-building Industries." "The Maritime Fisheries."

*La Marine Française.* Paris: 10th August, 1896.—"Marine Boilers." "Officers for Navigating Duties and Engineers." "The German Navy." "The Maritime and Commercial Movement in England in 1895" (*continued*). 25th August.—"French Diplomacy." "Opinions on the Service Afloat." "For Corsica." "The Wishes of Maritime Bretagne." "The Maritime and Commercial Movement in England in 1895" (*continued*).

*Le Yacht.* Paris: 1st August, 1896.—"The Shei-poo Affair: Recollections and Impressions." "The English Second-class Cruiser 'Doris.'" "The Naval Manœuvres in the Mediterranean." 8th August.—"The English Naval Manœuvres" (*continued*). "The Merchant Navy." "The Shei-poo Affair: Recollections and Impressions" (*continued*). 15th August.—"The Roller-Ship 'Ernest Bazin.'" "The Sea-Voyage from Havre to Brest by the President of the Republic." "The Shei-poo Affair: Recollections and Impressions" (*continued*). 22nd August.—"The Destroyers." "The Launch of the 'Ernest Bazin.'" "The new Armoured Cruiser 'Amiral Pothuau.'" "The Shei-poo Affair: Recollections and Impressions" (*continued*). 29th August.—"The United States Navy." "The Shei-poo Affair: Recollections and Impressions" (*concluded*).

*Le Moniteur de la Flotte.* Paris: 1st August, 1896.—"The Naval Manœuvres in the Mediterranean and Channel." "Suppression of the Corps of Administrators of the Inscription Maritime." 8th August.—"The Voyage of the President of the Republic." "The Naval Manœuvres." "The English Naval Manœuvres." 15th August.—"The Port of Havre." "The Voyage of the President round Brittany." "New Pay Regulations for certain classes of Petty Officers." "Auto-Mobile Torpedoes." "The Colonies." 22nd August.—"The Trans-Atlantic Mail Steamers." "The Colonies." "The Roller-ship 'Ernest Bazin.'" 29th August.—"The Ernest Bazin." "Ships at present undergoing their Trials."

GERMANY.—*Marine Rundschau.* Berlin: September, 1896.—"Public Maritime Law in Peace." "French Views on the Position and Employment of Guns in Battle-ships." "On the Use of the Hahn Range-Finder for Coast Service." "Should Uniform or Alternating Electric Currents be used on board Ships-of-War and Merchant Vessels?" "Extracts from the Report of the 'Meteor' on the Protection of the North-Sea Fisheries." "Book Notices."

ITALY.—*Rivista Marittima.* Rome: August-September, 1896.—"Oriollo, Du Temple, and Normand Boilers." "Notes on the Ventilation of Ships" (*concluded*). "On some Properties of the Increasing Latitudes." "The Unholy Alliance" (*continued*). "The New Rules for the Mercantile Marine." Letters to the Director:—"The Oil used for Smoothing Waves"; "The Assault on Maddalena in 1793." "Foreign Naval Notes." "Notes on the Mercantile Marine." "Various Notes." Literature:—"Letters of Don Juan of Austria to Giovanni Andrea Doria"; "Unsere Kriegsflotte," etc. Plates:—The French Armoured Cruiser "Chanzy"; Launch of the Portuguese Cruiser "Adamastor." Supplement:—"The Naval Organisation of the principal European Nations—Russia and Spain."

*L'Osservatore Navale.* Palermo: June-July, 1896.—"Battle-ships and Cruisers." "The International Regatta in the Gulf of Genoa." "The Electric Energy for working Armoured Turrets and Guns." "Some Foresight for the Mercantile Marine." "Corsair Cruisers." "Luigi Orlando." "The Port of Genoa." "On Explosions in Boilers." "Book Notices."

SPAIN.—*Revista General de Marina.* Madrid: August, 1896.—"Hydrographical Notices." "The Lagrafel D'Allest Boilers." "On the Employment of Petroleum." "The New Military Port Alexander III." "Belligerent Rights in regard to Maritime War." "The New French Naval-Cadres Regulations." "The Niclausse Boilers." "The Importance of Torpedo-boats." "Blockades."

UNITED STATES.—*Proceedings of the U.S. Naval Institute.* Vol. XXII. Annapolis: 1896.—"Naval Apprentices, Inducements, Enlisting, and Training; the Seaman Branch of the Navy." "Electricity in Naval Life." "Naval War College." "Shrinkages (applying Clavarino's Equations)." "The Dudley Powder-Pneumatic Gun." "Discussion of the Organisation, Training, and Discipline of the Navy *Personnel* as viewed from the Ship." "Discussion of Speed Control in Modern Steamers."

## MILITARY.

AUSTRIA-HUNGARY.—*Militär-Zeitung.* Vienna: 3rd August, 1896.—"Indefinite Leave." "The Summer Drills of the Russian Army." 11th August.—"A Study on Reconnaissance." "The Jubilee of the Hoch und Deutschmeister Regiment." 19th August.—"The Blockade of Crete." "The Expulsion of Cadets." 27th August.—"The Uniform Question."

*Organ der Militär-wissenschaftlichen Vereine.* Vienna: July, 1896.—"The Operations of the Russian General Rüdiger in 1831." "The Influence of the Adriatic on the Peoples of Middle Europe." "Gribeauval, the first Inspector-General of French Artillery in Austria."

*Mittheilungen über Gegenstände des Artillerie- und Genie-Wesens.* Vienna: August, 1896.—Has not been received up to time of going to press.

FRANCE.—*Revue du Cercle Militaire.* Paris: 1st August, 1896.—"Court Ball at the Kremlin." "The Battle of Adowa" (*continued*). 8th August.—"The Battle of Adowa" (*continued*). "Cavalry Schools: The School at Saumur." 15th August.—"The Moscow Fêtes." "The Battle of Adowa" (*concluded*).

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*Journal des Sciences Militaires.* Paris: August, 1896.—"The Effects of Musketry and Artillery Fire on the Field of Battle." "The Train in the English Abyssinian Campaign." "Cavalry Tactics." "Infantry Arms." "Critical Study on the Operations of the 14th German Corps in the Vosges, etc., in 1870" (*continued*).

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War" (*continued*). 26th August.—"Jacques Leroy de Saint Arnaud." "Mind and Matter in War" (*concluded*). 29th August.—"Marshal Dode de la Brunerie." "Practical Considerations on Inner and Outer Strategic Lines."

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*Revista Técnica de Infantería y Caballería.* Madrid: 1st August, 1896.—"The Wars in the Low Countries" (*concluded*). "The Philippine Islands: Spaniards be on the Alert!" "Some Points in the History of the Military Institutions of the United States" (*continued*). "The Colonial Wars of Portugal and Spain." "Ramón Muntaner, Warrior and Historian" (*continued*). "Military Hygiene in Cuba" (*continued*). 15th August.—"The Soldiers of America." "Some Points in the History of the Military Institutions of the United States" (*continued*). "The Philippine Islands: Spaniards be on the Alert!" (*concluded*). "Ramón Muntaner, Warrior and Historian" (*continued*). "On the Cuban Problem." "The Useful and Injurious Vegetable Growths in Cuba."

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# NOTICES OF BOOKS.

*An Ambassador of the Vanquished.* By the Duke DE BROGLIE. London: Heinemann, 1896. Translated, with notes, by ALBERT D. VANDAM. Price 10s. 6d.

This is one of the most interesting pages of contemporary history yet revealed, and possesses for English people quite exceptional value, as it throws a light on the wide differences of opinion on the subject of war, which exist between the English and the other great Continental Powers. England having practically all she requires, has come to look on war as a crime against humanity, to be averted at almost any cost, while Continental statesmen are so thoroughly accustomed to the idea, that they regard an appeal to the sword simply and solely as a business question. So much capital and a few lives promise such and such a return—if the return seems adequate the sword is drawn.

To put it in another way. The game of politics in Europe is viewed from exactly the same ethical standpoint as the railway boards of Great Britain view the game of competition for traffic. One of two great railway companies, for instance, wakes up to the conclusion that, by a specially fast service of trains to a given point, a material slice of traffic can be taken away from its rival. In all secrecy the permanent way is overhauled, new engines designed, new time-tables made out; and, at a few days' notice, a new service is inaugurated. The competing line takes up the challenge, and goes one better; is met by a further acceleration, and again retaliates; and so the game of brag goes on until one or the other gives in, or the matter is compromised. It happens that in the recent railway wars of this description no particular loss of human life actually occurred, but the directors of one of the competing lines, last summer, must either have been in singular ignorance of the state of their own permanent way, as disclosed by the St. Neot's accident, or have been perfectly indifferent to the human lives in their charge, for out of this dilemma they cannot escape.

Now, this book reveals an absolutely identical morality in the world of politics, the undercurrent runs through the whole work, but is principally apparent in the third and longest section, the article on "The Crisis of 1875."

Briefly, the history of this crisis was as follows:—France having apparently recovered with amazing swiftness from disasters, the military party in Germany suggested the question whether it would not be as well to recommence operations before the enemy had completed her defences, and overwhelm her for good and all. As to the morality of such an operation, the idea never seems to have dawned on them, and as to blood-guiltiness, the notion never even presented itself. It was simply treated as a common-sense matter of business, an operation presenting large possibilities with a minimum of risk; and the men who recommended it, unlike the ordinary commercial directors, were prepared to back their opinion with their own lives and against very considerable risks, as the statistics of the last war showed. How their plans were defeated, the reader will find in the pages of this book. The story is too long and too involved to be given here, and reading between the lines he will receive a flood of illumination, as to the supposed omniscience of the German General Staff, which deserves to be very specially

borne in mind. It is the business of the General Staff in Germany, as in all countries, to be accurately informed at all times as to the state of military efficiency attained by its neighbours. Statesmen go to the Staff for information on this point, and base their plans accordingly. Now, no living man at all acquainted with Moltke's personal character can for a moment question his absolute integrity, hence when we find Moltke himself, the organ of the General Staff, convinced that in 1875 the French Army was already so far advanced on the path of re-organisation as to constitute a serious menace, single-handed, to Germany, it is plain that somewhere or other a very grave lack of judgment must have been shown. For it is now known positively that such was not the case, and it is certain that no one who had really studied the history of the evolution of the French Army could for one moment have believed that it could be.

The re-organisation of an Army can never be the work of a day; it is true that by Act of Parliament men, horses, and material can be gathered together, but the training of a Staff to lead them is work of quite a different character. The nucleus of the new Staff must inevitably be formed on the ruin of the old one, and when, as in this instance, the old one was conspicuously inefficient and bureaucratic, at the least a generation, and strong leaders will be required before the new organisation can hope to make head against the overpowering friction engendered by over-centralisation and clerical irresponsibility.

The intervention of Russia, it is claimed by the author, dissipated the danger which he paints in colours a little too startling and vivid, for it is more than doubtful whether the Emperor himself was really seriously influenced by the war party, and Benedetti's "Studies in Diplomacy" are sufficient evidence to show that the old Kaiser was still quite strong enough to take his own line against Bismarck, whatever may have been the case subsequently.

To check the formation of a Franco-Russian alliance Prince Bismarck instigated Russia to assume the offensive in the direction of Constantinople, oblivious of the fact that such action must certainly bring England on the scene, and then, when events had developed sufficiently to disclose the ultimate possibilities of the situation, he withdrew his support from Russia and practically compelled her to accede to the British ultimatum. From this moment, the Berlin Conference, dates the Triple Alliance and the Franco-Russian *entente*—a situation which may make England for the time being the arbiter of the peace of Europe for at least such time as these alliances endure; and whether this result can be claimed as a triumph for Continental diplomacy, the reader can judge for himself.

The fact really is—and not only the book before us, but innumerable other diplomatic studies of the same period abundantly testify to it—that no single foreign chancellery had at that time for one moment contemplated the active intervention of Great Britain, or realised what such intervention might imply. The expression "command of the sea" conveyed no meaning for them, but from the moment when on the fateful Sunday in 1878, when Bismarck, arm in arm with Gorstchakoff and escorted by the two "Reichshunde," entered the Kaiserhof some forty minutes before the special train ordered for the British plenipotentiaries was due to leave Berlin, and it became evident that under certain contingencies Great Britain not only could, but would, fight, the centre of gravity of European politics shifted from Berlin to St. James'; and the jealousies of all nations displayed towards this country, of which there have been such abundant evidences during the past few years, are the direct outcome of the situation thus created.

From the English point of view, no doubt, the eternal gratitude of all nations should have been our least reward; but the men who stand revealed through this and kindred studies do not look at it in this light at all. To them England is simply a stumbling block in the path of their designs, and the shortest way to the realisation of that re-adjustment of the map of Europe to which they all look forward is to sink all differences and unite in one common effort to remove the obstacle.

*Vocabulary of Technical Military Terms: English—German, German—English.* For the use of Military Students. By Professor J. A. LIEBMANN, F.R.G.S., F.R.S.L., F.R.H.S., etc. London: Gale and Polden. (Paper 10½″ × 5″ × ¾″; weight under under 1 lb.) Price 5s.

The number of English officers who read German is rapidly increasing, and German military publications are as much studied as ever, in spite of Dr. Maguire's vigorous attack on them in last April's *United Service Magazine*, and they will probably continue to be so, because it is felt that, notwithstanding their dryness and want of literary finish, they generally go to the root of the matter. A handy German-English military dictionary would, therefore, now be welcomed by officers if it were thought reliable, as complete as its bulk reasonably admitted of, and up to date. It can hardly be said that this vocabulary is so. To successfully compile such a book, the author must not only be a master of the technical terms used in his mother tongue, but must be thoroughly acquainted with their exact equivalents in the language into which he is translating. An examination of this vocabulary would lead to the supposition that the learned professor hardly possesses these essential qualifications for the task, or else he has been ill-advised by his English friends, for, with the exception of the artillery terms, which are fairly well rendered, the translations seem in many instances wanting in precision, and there are many omissions which in a book of this kind might have been avoided.

Ausrüstung.—"Outfit"? "Fitting out equipment" would be better, as "outfit" is only used in a limited sense.

Abstand—is "distance," not necessarily between companies.

Austreten.—One of the English equivalents given is scarcely used in polite society. It should, of course, be "fall out."

Dienstalter.—Is not "length of service" more exact than "seniority"?

Postbefehl.—"Garrison orders." Why "garrison"?

Bereitschaft.—Why "inlying piquet" without any explanation?

Hängende Brücke.—Why "hanging" instead of "suspension" bridge?

Gewehrprüfungskommission.—"Proof authorities for arms." Surely a wonderful piece of word-coining! Would not "small-arms committee" do?

Handgemenge.—"Engagement." Should this not be "close fighting" or "hand-to-hand combat"?

Kaisermanöver.—"Emperor's manœuvres." It is difficult to criticise this.

Durchschnittenes Gelände.—"Intersected" country is a nearer equivalent.

Den Feind niederwerfen.—"To throw down the enemy." Should be "overthrow."

Eine Stappe—must also often be translated "a stage."

Feldstuhl.—Why not "camp-stool"?

Kapitulant—should be "re-engaged" man, not "re-inlisted."

Meldung.—"Information-report" is a coined term. Why not "Field-message" or "communication"?

Gewehr auf.—Why "draw swords"?

Schleichpatrouille—must be technically rendered "Reconnoitring patrol," as "prowler" is not yet sanctioned in our Service.

Leibwache.—Why not "body-guard," which is exact and literal? "Life Guard" with us means a particular corps.

Züchten.—Why not also "to train," "to discipline"?

Among the omissions the following may be noticed, among others, which constantly occur in German:—

Angabe.—Account, estimate.

Aufpflanzen.—Fix bayonets.

Kroqui.—Field sketch.

Durchschnitt.—Section.

Directionen.—Instructions.

Einschnitt.—Cutting.

Entwerfen.—To project.

Feldstecher.—A field glass.
Gewehrriemen.—Slings.
Karten = Signature --- conventional signs.
Kriegsberichtstatter.—War correspondent.
Verplegung.—Supply, provisioning.
Verpflegungsvorrath.—Reserve rations.

It will be seen from the above examples that this book, which might have been made one of great utility, hardly fulfils its requirements, and English officers must not trust themselves to it alone for their translation.

It is to be hoped, therefore, that a more accurate and complete handbook of German military terms may be compiled to facilitate the studies of officers of both nations.

That such a book is wanted, the publication of the volume before us is evidence.

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*Histoire de l'Armée de Condé pendant la Révolution française, 1791-1801. D'après les Archives de l'État, les mémoires de l'émigration, et les documents inédits.* By RENÉ BITTARD DES PORTES. Paris: E. Dentu, 1896. Price 7.50 frs.

The history of the French officers and soldiers, nobles and citizens, who, in 1791 and 1792, betrayed their country for the purpose of remaining faithful to an obsolete and worthless dynasty, has been written over and over again. There are, among many others, the works of d'Ecquevilly, Romain, Muret, Forueron, Duquet; the memoirs of the Prince de Condé, of Chateaubriand (entitled "D'outre-tombe"), of de Marsangy; the biographies of Welschinger and Boutetière. And, forsooth, the miserable story of those unfortunate and expatriated men, who accepted the pay of the arch-enemies of their country—Prussia, Austria, Russia, England—does not deserve a fresh work of 400 pages, issued in stately demi-octavo, as a serious contribution to historical literature—which it is not.

It is easy enough to cast stones at the memory of men now dead well-nigh a century, neither must it be implied that they forsook their country for the mere pleasure of turning traitors, much less for sordid gain: they were simply blind. They failed to realise that patriotism, the noblest of all virtues, is no respecter of persons, be they called emperors, kings, or plain grandees; that, while loyalty to a (rightly or wrongly) beloved personality is touching and often beautiful, loyalty to a cause (that of the nation) is divine; and that, where the two clash, the former becomes treachery thinly veiled, though none the less ugly.

Furthermore, M. des Portes is evidently not a historian. He has far too much bias. Read, for instance, the concluding sentence of his preface, which is utterly out of place in a volume of history; and many cursory remarks dispersed throughout the narrative give evidence of unfriendly feeling toward other nations, such as a true historian, if he possessed it at all, would try to conquer with the utmost strength of his nature.

Then, again, the author has made a bad selection of material. Long lists of names of killed and wounded, now utterly devoid of interest; tables of tactical units, worthless for modern purposes; quotations from other works extending over whole pages; long reproductions of correspondence: these make up nearly one-third of the volume.

These drawbacks despite, the book is eminently readable. The writing is vivid and picturesque and the interest well sustained, except where statistics, tables, or extracts break the continuity of the narrative. The constant change of tense, however, from past to present, and back again, even within a single sentence, is either a gross fault of style, or a proof of slipshodness. Otherwise the author displays all the elements of forcible writing of the *fin-de-siècle* kind in its best form. He ought to be an ideal journalist.

With all its faults the book can be commended to students of military history, who will find much that is interesting, and not a little that is sensational. It does not profess to teach, but it causes to think, which is almost as good.

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*In the Day of Adversity, A Romance.* By JOHN BLOUNDELLE-BURTON. London: Methuen and Co., 1896.

In this, his last book, Mr. Bloundelle-Burton has well maintained the high reputation which the authorship of "The Hispaniola Plate" and "A Gentleman Adventurer" gained for him. "In the Day of Adversity" will be specially welcomed by the Service reader, whether he belong to the naval or military branch of the profession of arms; for it traces the career of one who was a soldier of France when that country was under Louis Quatorze at the zenith of its military glory, and who was afterwards a seaman in the English Navy at the close of the seventeenth century, when men like Russel and Rooke were welding into shape the sea-power that men like Drake and Hawkyns had inaugurated a century previous. The soldier or the sailor, if he be of the best of his calling, is above all a man of self-reliance and courage, and, whether he be commissioned or non-commissioned, seaman or officer, he is one to whom duty and discipline are ever the watchwords, and whose motto is "If thou faint in adversity, thy strength is small." Of such a type is the hero, Georges St. Georges, erst lieutenant in the Nivernois Light Horse, then "*forçat* No. 211" on the great galley "L'Idole," and, finally, gunner's mate of the "Windsor Castle," one of the Blue Squadron of Russell's fleet acting against the French fleet under Tourville. Without disclosing the plot, enough has been said to show that the book bristles with incident from cover to cover. Moreover, whether the author is dealing with military incident of the Louis Quatorze period, harrowing his reader with description of the galley slave's tortured existence, or depicting the great fight of La Hogue—a battle now for the first time utilised for the purposes of fiction—he is throughout, not only graphic but realistic, but also absolutely true to historical detail. Every line is evidence of the carefulness and abundance of research Mr. Bloundelle-Burton has devoted to his task. Hence the book is not only amusing but instructive, and should find a place in every barrack and ship's library throughout the services.

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*Torpedoes and Torpedo Vessels.* By Lieutenant G. E. ARMSTRONG, late R.N. 5s.

This third volume of the Royal Navy Handbooks is written in a very clever and entertaining style, and, without doubt, will be read with the greatest interest from beginning to end by the general public for whom it was compiled, as well as by naval and professional men generally. Although the author does not profess to dive much below the surface in the matters of which he treats, yet he has managed to gather a great deal of useful information within the limited space at his disposal, in which he has practically covered the whole field of torpedoes and torpedo warfare, and in such a way that any intelligent reader in laying down the book may feel satisfied that he has gained as much information on the subject as is possessed by the average naval man. Although no important secrets are divulged and nothing is published in the book but what is well known to foreign Governments, yet one may venture to prophesy that this work will prove of absorbing interest to naval officers of other European nations who have not access to the Government records, as it will give them a very good insight into the general arrangements and routine of our naval torpedo service. Foreign officers are very keenly on the look-out for any information touching our own Navy; and it is, we think, very probable that a French, German, or Italian translation of this work will be called for in the near future. The different divisions of the subject are each so well treated throughout that it would be invidious to select any for special criticism or eulogy. Everyone who takes an interest in the Navy as it is,

especially the torpedo branch of it, should obtain this book for themselves, for it is certainly the most complete and instructive treatise on torpedo service and torpedo vessels generally which has yet been published.

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*Die Geschichte der Explosivstoffe.* By S. J. ROMOCKI. Vol. II. Berlin, 1896. Price 10s.

The first volume, dealing with the ancient history of explosives, was recently noticed in the JOURNAL of the R.U.S.I., and the present volume is concerned with more modern developments of the science. The subject is divided into chapters as follows :—I. Saltpetre powder with reduced proportion of sulphur. II. Chlorate powder. III. Ammonium-nitrate powder. IV. Picrate powder. V. Zyloidine. VI. The invention of gun-cotton. VII. Trial and ultimate rejection of gun-cotton in Austria. VIII. Nitro-cellulose from its re-introduction by England to the invention of the Vielle powders. IX. The nitro-cellulose powder of the present.

In these chapters the author has thoroughly exhausted the subject, and the book will no doubt be specially valuable to experts, who will read it with very great interest. Chapter IX., dealing with the manufacture of nitro-cellulose, is well illustrated, and the descriptions are clear and interesting.

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*The Oxfordshire Light Infantry Chronicle,* 1895.

Every officer of the old 43rd and 52nd Light Infantry must be familiar with the annual record which is compiled with such evident care, by Major A. F. Mockler-Ferryman. This is the fourth volume, and to say that it is up to the standard of its predecessors, is no small measure of praise. The illustrations, including one of Lord Seaton taken when, as Sir John Colborne, he commanded the 52nd, and one of Ensign Leeke who carried the 52nd regimental colour at Waterloo, are extremely well done. The literary contents include a chapter on the colours of the 43rd and 52nd, compiled by Mr. S. M. Milne, with his proverbial care and accuracy.

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| — | ,, | M. L. Henry* | 1635 | — | | R. P. S. Elderton* | 1745 |

* Subsequently admitted.

The total number of SUCCESSES OBTAINED in 1895 was ONE HUNDRED and TWENTY-NINE. Among these the FIRST PLACE on the lists in the various Examinations WAS TAKEN FIVE TIMES, and THIRTY-TWO Pupils were among the first TEN in the various subjects.

| | |
|---|---|
| **SANDHURST** | **FORTY-FIVE.** |
| **WOOLWICH** | **SEVENTEEN.** |
| **STAFF COLLEGE** | **EIGHT.** |
| **MILITIA LITERARY** | **SIXTEEN.** |
| **MILITIA COMPETITIVE** | **TWENTY-EIGHT.** |
| **PROMOTION** | **FIFTEEN.** |

### STAFF COLLEGE, 1895.

| | | |
|---|---|---|
| FIRST | ... Capt. J. E. Edmonds, Royal Engineers | 4700 |
| SECOND | ... Capt. G. M. W. Macdonogh, Royal Engineers | 4168 |
| 6th | ... Capt. B. Holloway, 2nd Madras Lancers | 3770 |
| 14th | ... Capt. R. Haking, 2nd Hampshire Regiment | 3481 |
| 21st | ... Capt. E. H. H. Allenby, 6th Inniskillings | 3151 |
| 28th | ... Lieut. E. J. Buckley, Royal Inniskilling Fusiliers | 3023 |
| — | ... *Capt. D. Haig, 7th Hussars | 2642 |
| — | ... *Major W. Douglas, Royal Scots | 2307 |

*i.e.*, **EIGHT out of THIRTEEN who went up.** *N.B.*—This list does not include Officers who qualified, but were unsuccessful. * Nominated for admission.

At the Examinations in 1892, '93, '94 and '95, Fifty-Three Officers went up, of whom Thirty-Nine passed into the College, the first place being taken on each occasion. The following list shews the number in the first ten in each subject.

*Military History—FIRST (two), 2nd (three), 3rd (two), 4th (four), 5th, 6th, 7th, 8th (two), 9th, 10th (two).
†Military Administration—SECOND, 3rd and 4th.
Mathematics—FIRST (three), 2nd (three), 3rd, 4th, 5th (three), 6th (two), 8th, 9th, 10th.
Fortification—FIRST (two), 2nd (three), 4th (four), 7th, 8th, 9th, 10th.
Topography—FIRST (two), 2nd (two), 3rd (two), 5th, 8th (two), 9th (two), 10th.
Tactics—FIRST, 2nd (three), 3rd (two), 5th (three), 6th, 7th (two), 9th, 10th.
Military Law—FIRST, 2nd (three), 4th, 5th, 6th (two), 7th (two), 8th, 9th (three), 10th.
†Geography—FIRST, 8th, 9th.
French—FIRST (three), 3rd, 4th, 5th, 7th (two), 9th 10th.
German—FIRST (two), 3rd (three), 6th (three), 7th, 9th (two), 10th.
Hindustani—FIRST (two), 3rd (two), 4th (two), 5th (two), 6th, 8th, 9th (two), 10th (two).
Russian—Third, 4th, 5th (two), 6th, 7th.

* In this subject the highest percentage ever obtained, also full marks in the "Special Campaign," were won by our pupils. Captain James always prepares special notes on the Campaign, the results from which are shown above.
† There has only been one examination in these subjects (1895).

### PROMOTION.

264 Officers have passed, of whom a large proportion have been "distinguished" and a great number have obtained "Special Certificates." Arrangements are made for tuition by correspondence, and special ones for promotion from Major to Lieut.-Colonel.

THE MILITARY STAFF INCLUDES THE FOLLOWING—

| | |
|---|---|
| **Tactics** | Captain W. H. JAMES, P.S.C., late R.E. |
| | Lieut.-Colonel A. R. SAVILE, P.S.C., late Royal Irish Regiment. |
| **Military History** | Captain JAMES and J. A. ANDERSON, Esq. |
| **Fortification** | Captain M. H. GREGSON, late R.E. |
| **Military Law** | Captain W. AINSWORTH, late Adjutant 106th Regiment. |
| **Topography** | H. P. WILLIAMS, Esq., late 27th Regiment. |
| **Assistant Instructors** | Captain G. H. FENNER. |
| | Captain C. M. M. HASTINGS, late South Wales Borderers. |
| | J. H. MORTIER HEIMANN, Esq., late 17th Prussian Regiment |
| | Lieut.-Colonel E. O'SULLIVAN, P.S.C., late Royal Artillery. |
| | G. P. A. PHILLIPS, Esq., Submarine Miners, Royal Engineers. |

The CIVIL STAFF embraces Thirty-Seven, of whom Thirty-One are University Graduates in High Honours.

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